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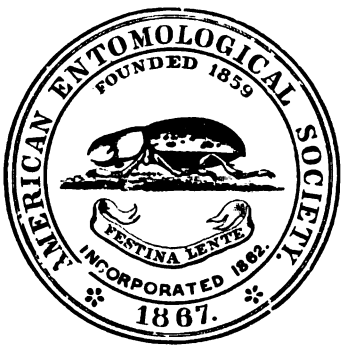

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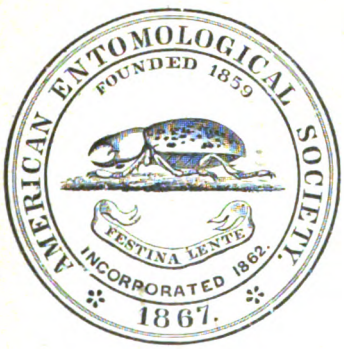

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TRANSACTIONS

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VOLUME XXIV.

A GENERIC REVISION OF THE PTILODONTIDÆ AND MELALOPHIDÆ.

BY HARRISON G. DYAR.

Under these names I include the Notodontidæ as recently recognized. The family as such has been revised by the late Mr. Neumoegen and myself (Trans. Am. Ent. Soc. xxi, pp. 179–208). The arrangement of species there set forth needs scarcely any change, but a few of the generic terms require correction when we come to compare the European fauna. The principal error is due to my having selected the wrong type for the genus *Notodonta*.

I propose here to briefly bring together the generic terms used for these moths as far as concerns the fauna of North America, Europe and India. It is possible to include India from the valuable work of Mr. G. F. Hampson.

The Ptilodonts and allies represent a group of closely intergrading genera, leading up from what is probably the lowest type of the Bombyces. The group may be defined as Noctuid moths with 3-branched cubital vein and frenulum, of robust build, vein iii of secondaries arising beyond the cell. The lowest genera (e. g. *Gluphisia*) present smooth larvæ with simple setæ; others have variously humped or otherwise modified bodies. Then follows a group in which the moths tend to lose the tongue, although not sharply marked off by this character. The larvæ, however, are hairy; that is, they have developed warts and secondary hairs The wart formation is peculiar, being characterized by three warts above the stigmatal wart on the thorax, and thus contrasted with the par-

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allel wart formation in the Arctiid allies, another great branch of the Bombyces. At first these warts are in line, but soon we reach forms (e. g. *Apatelodes*) in which the central wart is moved back out of line. At this point a large group of moths in India has diverged from the type in losing one vein on the fore wings. These are the true Eupterotidæ, and form the highest group of the Ptilodont allies. The line is, however, almost directly continued by the European genus *Lemonia* (frenulum gone) into the Lachneidæ (cubitus 4-branched), the larvæ remaining true to type, but becoming gradually more specialized to culminate in the Lachneids.

Therefore, I would make three groups or families, from the moths most nearly related to the Ptilodonts as follows:

Fore wings 12-veined.
Tongue present; larvæ simple haired.....**Ptilodontidæ.**
Tongue often absent: larvæ with warts.....**Melalophidæ.**
Fore wings 11-veined, tongue absent; larvæ with warts.....**Eupterotidæ.**

The first two families will be treated here; the third will be found in Hampson's "Moths of India," vol. i, and I would only change his account by removing the genus *Cnethocampa*. I shall include the genera of the Ptilodonts and Melalophids in a single synoptic table, since the families present no sharp characters in the moths. Dr. Packard includes then both in his Notodontidæ, and describes the Melalophid larva as a "hairy Notodontian." This is really what they are, and I differ from Dr. Packard only in making the character of family importance.

The Melalophidæ will thus stand on the same footing as the Apatelidæ, and it is open to those who so prefer to give both these groups less than family rank. I should probably do so myself were I not especially interested in the larval characters.

The characters heretofore used for genera are in so far arbitrary that they often separate closely allied species. However, in default of a natural grouping I adopt the characters used by Hampson. They are not more arbitrary than those which I used in the paper with Mr. Neumoegen, while they allow of more easily correlating the Indian genera.

I am indebted to Mr. A. R. Grote for kindly confirming the types of many of the genera.

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Key to the Genera.

1. Fore wings with no tuft of scales on the inner margin ..... 2.
   Fore wings with a tuft of such scales ..... 44.
   Fore wings with such a tuft and another at the outer angle ..... 52.
2. End of abdomen without a tuft of long scales ..... 3.
   End of abdomen with such a tuft of scales ..... 55.
3. Hind wing with vein 5 (v_2) present ..... 4.
   Hind wing with vein 5 absent ..... 42.
4. Primaries produced and narrow ..... 5.
   Primaries not produced and broad ..... 19.
5. Primaries with the inner margin produced into a triangular lobe. **Norraca.**
   Primaries with the inner margin produced into a rounded lobe. **Turnaca.**
   Primaries with the inner margin evenly rounded ..... 6.
6. Apex of primaries acute ..... 7.
   Apex of primaries rounded ..... 13.
7. Primaries very long ..... 8.
   Primaries shorter ..... 10.
8. Primaries with an accessory cell ..... **Baradesa.**
   Accessory cell absent ..... 9.
9. Antennæ of ♂ pectinated to the tip ..... **Rachia.**
   Antennæ pectinated on the basal two-thirds ..... **Hoplitis.**
10. Palpi upturned, reaching above vertex of head ..... 11.
    Palpi porrect ..... **Ramesa.**
11. Primaries with a short accessory cell, vein 10 (iii_a) given off after it. **Pydna.**
    Accessory cell long, vein 10 given off from it ..... 12.
12. Antennæ of ♂ fasciculate ..... **Ceira.**
    Antennæ lengthily bipectinate ..... **Torona.**
13. Accessory cell absent ..... **Eilida.**
    Accessory cell present ..... 14.
14. Vein 10 (iii_2) arising from the top of the accessory cell ..... 15.
    Vein 10 arising beyond the tip of the accessory cell ..... 18.
15. Vein 5 of primaries from the center of the cell ..... 16.
    Vein 5 from the cross-vein near the upper angle of the cell ..... **Damata.**
16. Palpi slight and fringed with hair ..... **Niganda.**
    Palpi broad and rounded ..... 17.
17. Antennæ of ♂ pectinated to the tip ..... **Gargetta.**
    Antennæ of ♂ with the terminal half filiform ..... **Thaconia.**
18. Antennæ of ♂ fasciculate ..... **Phalera.**
    Antennæ of ♂ pectinated on the basal two-thirds ..... **Exæreta.**
19. Primaries without accessory cell ..... 20.
    Accessory cell present ..... 28.
20. Outer margin of primaries irregular ..... 21.
    Outer margin evenly curved ..... 22.
21. Veins 7-10 (iii_2-iii_5) arising close together from a long stalk or a small stalked areole ..... **Apatelodes.**
    Vein 7 (iii_5) arising remote from veins 8-10 ..... **Zarangæ.**
22. Veins 3 and 4 (v_3–vii^1) of secondaries arising from the cell ..... 23.
    Veins 3 and 4 stalked in the ♂ ..... 25.

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23. Vein 7 of primaries given off beyond vein 10.....24.
Vein 7 given off before 10 (further from the apex of wing).....26.
24. Apex of primaries slightly acute.....**Fentonia.**
Apex more distinctly rounded.....**Harpyia.**
25. Tongue present.....**Metaschalis.**
Tongue absent.....**Thaumetopœa.**
26. Secondaries with veins 7 and 8 (ii-iii) bent upward toward the costa.
Liparopsis.
Secondaries with veins 7 and 8 not so bent.....27.
27. Male antennæ pectinated on the basal two-thirds or ciliate...**Stauropus.**
Male antennæ pectinated to the tip.....**Gluphisia.**
28. Vein 10 of primaries arising from the top of the accessory cell.....29.
Vein 10 arising beyond the end of the accessory cell.....35.
29. Primaries with vein 6 (v_1) from the angle of the cell.....**Zana.**
Primaries with vein 6 stalked.....30.
30. Accessory cell long, vein 6 arising before the end of it.....31.
Accessory cell short, vein 6 from its tip.....**Cerura.**
31. Antennæ fasciculate or ciliate.....32.
Antennæ of ♂ pectinate for the basal two-thirds.....33.
Antennæ of ♂ broadly pectinated to the tip.....**Hyparpax.**
32. Primaries acute at apex.....**Anticyra.**
Primaries rounded at apex.....**Chadisra.**
33. Head without a distinct vertical tuft; anal tuft simple in ♂.....34.
Head with a slight vertical tuft; anal tuft of ♂ furcate.....**Schizura.**
Head with a distinct vertical tuft; palpi long.....**Dasylophia.**
34. Accessory cell moderately long.....**Enhyparpax.**
Accessory cell reaching half way to apex of wing.....**Heterocampa.**
35. Vein 6 of primaries arising beyond the angle of the cell.....36.
Vein 6 arising from the angle of the cell.....41.
36. Primaries with vein 5 from near the upper angle of the cell.....37.
Primaries with vein 5 from the middle of the cross-vein.....38.
37. Antennæ pectinated in both sexes; wings white.....**Andria.**
Antennæ of ♂ shortly pectinated; of ♀ simple.....**Symmerista.**
38. Palpi short and porrect.....39.
Palpi upturned, reaching the vertex of the head.....40.
39. Antennæ of the ♂ pectinate-fasciculate.....**Anthena.**
Antennæ fasciculate only.....**Datana.**
40. Thorax not crested.....**Somera.**
Thorax crested anteriorly.....**Nerice.**
41. Primaries with a short accessory cell, vein 7 from the end of it...**Nadata.**
Accessory cell long, vein 7 from before the end of it; thorax not crested.
Cleapa.
42. Apex of primaries rounded.....43
Apex of primaries acute and produced.....**Hapigia.**
43. Primaries broad, excised before the apex.....**Pygæra.**
Primaries narrow, the margins even.....**Melalopha.**
Primaries long and narrow.....**Eunystalea.**
44. Secondaries with veins 3 and 4 from the cell.....45
Secondaries with veins 3 and 4 stalked.....**Megaceramis.**

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45. Primaries with no accessory cell ..... 46.
Accessory cell present ..... 49.
46. Antennæ of ♂ ciliate only ..... **Lophodonta.**
Antennæ of ♂ shortly pectinate ..... 47.
Antennæ of ♂ heavily plumose ..... **Ptilophora.**
47. Tooth on internal margin of primaries large; outer margin not very oblique. **Ochrostigma.**
Tooth moderate, outer margin more oblique ..... 48.
Tooth very small; wings comparatively narrow ..... **Drymonia.**
48. Antennæ pectinate in both sexes; outer margin crenulate ..... **Pheosia.**
Antennæ of ♀ simple; outer margin usually entire ..... **Notodonta.**
49. Primaries with the outer margin irregular; thorax crested. **Euhampsonia.**
Primaries with the outer margin crenulate ..... 50.
Primaries with the outer margin entire ..... 51.
50. Primaries narrow, thorax smooth ..... **Ianassa.**
Primaries broad, thorax crested ..... **Ptilodon.**
Primaries broad, thorax scarcely crested ..... **Odontosia.**
51. The tooth on internal margin of primaries distinct ..... **Hyperæschra.**
This tooth small ..... **Microdonta.**
52. Primaries with vein 10 arising beyond the accessory cell ..... 53.
Primaries with vein 10 arising on top of the accessory cell ..... **Apela.**
53. Palpi very long ..... **Pterostoma.**
Palpi short ..... 54.
54. Antennæ pectinate ..... **Spatalia.**
Antennæ of ♀ fasciculate ..... **Besaia.**
55. Vein 10 arising beyond the tip of the accessory cell ..... **Tarsolepis.**
Vein 10 arising from the top of the accessory cell ..... **Dudusa.**

Family PTILODONTIDÆ (Hübner).

1810. PTILODONTES Hübner, Tentamen.
1818. PTILODONTES Hübner, Verz. bek. Schmett., 145.
1866. PTILODONTES Grote and Robinson, Ann. N. Y. Lyc. N. H.
1882. PTILODONTES Grote, New Check List.
1895. PTILODONTIDÆ Grote, Abh. Nat. Vereins zu Bremen, xiv.
1895. PTILODONTIDÆ Grote, Syst. Lep. Hildesiæ.

The oldest name for this family is Ptilodontidæ, as deduced by Mr. Grote. Hübner has two types in the Tentamen which are included in the family as here limited, Ptilodontes and Andriæ, the former occurring first. These names are used for the "Stamm" or "stirps," the name taken from a typical genus and thus corresponding to our requirements for a family name, whereas Hübner's "tribes" and "families" have descriptive names, and are therefore without standing.

In the Verzeichniss, the Ptilodonts are scattered under the terms

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Dimorphæ, Ptilodontes, Andriæ and Apatelæ. Stephens, Herrich-Schaffer, Walker, and recently Smith, Packard and others, include the group under the term Notodontidæ. Duponchel calls them Dicranuridæ and Pygærides, Boisduval Bombycini and Pseudobombycini and Newman Phalæina Notodontites. We will apply here only the earlier name, that of Hübner's Tentamen.*

Genus **NORRACA** Moore.

1881.—Moore, Proc. Zool. Soc. Lond. 340.
1892.—Hampson, Moths of India, i, 137.

Adequately described by Hampson. Type and sole species, *N. longipennis* Moore. "Larva sphingiform, with a horn on anal segment" (eighth abdominal?)

Genus **TURNACA** Walker.

1864.—*Turnaca* Walker, Cat. Lep. Brit. Mus. xxxii, 454.
1887.—*Ambadra* Cotes and Swinhoe, Cat. Moths of India, 183.
1892.—*Turnaca* Hampson, Moths of India, i, 136.

Type and sole species, *T. acuta* Walker.

Genus **BARADESA** Moore.

1883.—Moore, Proc. Zool. Soc. Lond., 16.
1892.—Hampson, Moths of India, i, 131.

Type and sole species, *B. plumosa* Moore.

Genus **HOPLITIS** Hübner.

1818.—Hübner, Verz. bek. Schmett., 147.
1853.—*Hybocampa* Lederer, Verh. zool.-bot. Ges. Wien, ii, 78.
1892.—‖ *Pheosia* Hampson (in part), Moths of India, i, 160.

Palpi short, or longer and upturned; antennæ of ♂ with stiff pectinations on the basal three-fourths, the tip serrate; shorter pectinate in the ♀; fore wings

* Those who refuse to recognize the Tentamen names base their objection to them on the ground that the names are unaccompanied by description. Now, while the abstract proposition that a generic or family name should be accompanied by a description to receive recognition would seem to command assent, yet the difference between an undescribed genus and one insufficiently described is so slight that I see no advantage in drawing a line between them. In the Lepidoptera, especially in the "Bombyces," the majority of genera are so described as to be of no use to the monographer, and it becomes a question of examining the type of each. Under these conditions Hübner's Tentamen genera and the families founded on them, though not described, have a better standing than many modern genera, for they contain but a single species, usually a well known and easily obtainable one and the type is never in doubt.

Those who reject Hübner, and especially those who, like Mr. Hampson reject Verzeichniss names, which are really accompanied by description, should also reject all of Walker's names and many of those of several other authors, and this has never been seriously proposed.

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long and narrow, vein 5 (v_2) given off from the center of the cell, 6-10 (iii_2-v_1) stalked: hind wings with vein 5 from center of cell, 6 and 7 stalked, 8 running close to 7 to near end of cell.

Type *H. milhauseri* Fab. (= *vidua* Knoch, = *terrifica* Borkh.)

The larva has a nutant forked hump on first abdominal segment, a horn-like one on eighth abdominal and is colored largely green.

The genus also includes *H. striata* Hampson (*Rachia striata*).

Genus **PYDNA** Walker.

1855.—*Pydna* Walker, Cat. Lep. Het. Brit. Mus. vii. 1753.
1855.—*Bireta* Walker, Cat. Lep. Het. Brit. Mus. vii, 1754.
1864.—*Menapia* Walker, Cat. Lep. Brit. Mus. xxxii, 461.
1892.—*Pydna* Hampson, Moths of India, i, 138.

Male antennæ pectinate or fasciculate; ♀ slightly pectinate or ciliate.

Type *P. testacea* Walk. The genus also contains *P. longivitta* Walk. (type of *Bireta* and *Menapia*), *decurrens* Moore, *nana* Swinhoe, *pallida* Butl., *ochracea* Moore, and *galbana* Swinhoe according to Hampson.

Genus **CEIRA** Walker.

1864.—*Ceira* Walker. Cat. Brit. Mus. xxxii, 462.
1892.—*Pydna* Hampson (in part), Moths of India i, 140.

Type *C. metaphœa* Walk. Other species, *P. eupatagia* Hamps., *aurata* Moore, *fasciata* Moore, *sikkima* Moore, *nigropunctata* Hamps., *nigrofasciata* Hamps., and *basistriga* Moore.

Genus **TORONA** Walker.

1864.—*Torona* Walker. Cat. Brit. Mus. xxxii. 467.
1892.—*Pydna* Hampson (in part), Moths of India i. 142.

Type and sole species, *T. terrifera* Walker.

Genus **RAMESA** Walker.

1855.—Walker, Cat. Brit. Mus. v, 1016.
1892.—Hampson, Moths of India i, 142.

Type *R. tosta* Walk. The other species are *fuscipennis* Hampson, and *divisa* Moore.

Genus **ELLIDA** Grote.

1876.—Grote, Can. Ent. viii, 125.
1894.—Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 208.

Palpi short and porrect: wings long, vein 5 given off from the middle of the cell, 6-10 stalked: on secondaries 5 from the middle of the cell, 6 and 7 stalked. 8 very close to 7 to near the end of the cell.

Type and sole species, *E. caniplaga* Walker (*gelida* Grote)

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Genus **DAMATA** Walker.

1855.—Walker, Cat. Lep. Brit. Mus. v, 1044.
1892.—Hampson, Moths of India i, 156.

Type *D. longipennis* Walk. A second species is *D. microsticta* Hampson.

Genus **NIGANDA** Moore.

1879.—Moore, Desc. Lep. Ind. Atkinson, 63.
1892.—Hampson, Moths of India i, 138.

Type and sole species, *N. strigifascia* Moore.

Genus **GARGETTA** Walker.

1864.—Walker. Cat. Lep. Brit. Mus. xxxii, 455.
1892.—Hampson, Moths of India i, 135.

Type *G. costigera* Walk. The other species are *G. nagœnsis* Hamps. and *curvaria* Hamps.

Genus **THACONA** Walker.

1864.—*Thacona* Walker, Journ. Linn. Soc. Lond. viii. 169.
1866.—*Porsica* Walker, Cat. Brit. Mus. xxxv. 1823.
1892.—*Gargetta* Hampson (in part), Moths of India i, 136.

Type *T. costivitta* Walker. Other species, *T. ingens* Walk. (type of *Porsica*) and *T. albimacula* Hampson.

Genus **EXÆRETA** Hübner.

1818.—*Exæreta* Hübner, Verz. bek. Schmett., 200.
1832.—*Uropus* Rambur, Ann. Soc. Ent. France, i, 278.

The palpi are short and hairy; wings long, the apex rather sharp, vein 5 from the middle of the cell, both it and the cross-vein weak in the hind wings; accessory cell present, vein 10 arising beyond it.

Type *E. ulmi* Den. and Schiff.

The larva is without humps, but has long divergent anal feet; its coloration is dark, with longitudinal lines.

Genus **ZARANGA** Moore.

1884.—Moore, Trans. Ent. Soc. Lond., 357.
1892.—Hampson, Moths of India i, 146.

Type and sole species, *Z. pannosa* Moore.

Genus **METASCHALIS** Hampson.

1892.—Hampson, Moths of India i, 158.

Type and sole species, *M. disrupta* Moore.

Genus **LIPAROPSIS** Hampson.

1892.—Hampson, Moths of India i, 154.

Type and sole species, *L. postalbida* Hampson.

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Genus **STAUROPUS** Germar.

1812.—*Stauropus* Germar, Syst. Gloss. 45.
1818.—*Terasion* Hübner. Verz. bek. Schmett. 147.
1855.—*Netria* Walker, Cat. Brit. Mus. vi, 1504.
1877.—*Hupodonta* Butler. Ann. Mag. Nat. Hist. (4) xx, 475.
1892.—*Stauropus* Hampson, Moths of India i, 149.
1892.—‖ *Pheosia* Hampson, Moths of India i, 160.

The antennæ of the ♂ may be pectinate with the terminal fourth filiform, or fasciculate; of ♀, pectinated or ciliate.

Type *S. fagi* Linn. The other species are *sikkima* and *maculatus* Moore, with the antennæ fasciculate and *alternus* Walk., *sikkimensis* Moore, *dentilinea* Hamps., *apicalis* Moore, *viridescens* Walk. (type of *Netria*), *pallidifascia* Hamps., *albivertex* Hamps., *fasciata* Moore, *griseus* Hamps., *orbifer* Hamps., *basiniger* Moore, *vinaceus* Moore, *plagiviridis* Moore, *moorei* Dyar (*Pheosia fasciata* Moore), *pulcherrima* Moore (type of *Hupodonta*, *excurvata* Hamps., *grisea* Swinhoe, *strigata* Moore.

The larva of the type is grotesquely humped and has long thoracic and anal feet, assuming positions in mimicry of a spider; the larvæ of *alternus* and of *sikkimensis* is similar; that of *viridescens*, however, is smooth, thickest in the middle like Heterocampa, green with purple and yellow marks; that of *moorei* has also a long dorsal process on the first abdominal segment.

Genus **GLUPHISIA** Boisduval.

1829.—*Gluphisia* Boisduval, Ind. Meth. 56.
1892.—‖ *Melia* Neumoegen, Can. Ent. xxiv, 225.
1893.—‖ *Eumelia* Neumoegen, Can. Ent. xxv, 25.
1893.—*Ceruridia* Packard, Psyche vi, 502.

The palpi are very short and obscure. Wings moderately broad, the apex rectangularly rounded; vein 5 from the middle of the cross-vein, weak on secondaries, 6 from the apex of the cell, 7-10 stalked, no accessory cell; 6 and 7 of secondaries on a long stalk, 8 close to 7 to near end of cell. Male antennæ pectinated to the tip, female simple.

Type *G. crenata* Esper. The other species are *septentrionalis* Walk., *formosa* Hy. Edw., *albofascia* Hy. Edw., *severa* Hy. Edw. (type of *Melia* and *Ceruridia*), *lintneri* Grote. The larvæ are smooth, green, without any humps.

Genus **ZANA** Walker.

1855.—Walker, Cat. Brit. Mus. vii, 1700.
1892.—Hampson, Moths of India i, 144.

Type and sole species, *Z. lignosa* Walk.

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Genus **FENTONIA** Butler.

1881.—*Fentonia* Butler, Trans. Ent. Soc. Lond. 20.
1892.—*Fentonia* Hampson, Moths of India i. 147.
1893.—*Macrurocampa* Dyar, Ent. News iv. 34.
The male antennæ may be pectinate to the tip, or the terminal third serrate.

Type *F. ocypete* Brem. The other species are *F. argentea* Moore, *brunnea* Moore, *obliquiplaga* Moore, *apicalis* Moore, *tenebrosa* Walk., *marthesia* Cramer (type of *Macrurocampa*), *dorothea* Dyar.

The larva of *marthesia* has the anal legs developed into flagella in the early stages. The larvæ of the Indian and Japanese species are unknown and may have very different facies.

Genus **HARPYIA** Ochsenheimer.

1810.—*Harpyia* Ochsenheimer, Schmett. Eur. iii. 19.
1818.—*Harpyias* Hübner, Verz. bek. Schmett. 148.
As in *Cerura*, except that the accessory cell is absent.

Type *H. bicuspis* Borkh. Congeneric are *H. borealis* Boisd., *cinerea* Walk., *scolopendrina* Boisd. and *modesta* Hudson.

Genus **CERURA** Schrank.

1802.—Schrank, Fauna Boica ii. 155.
1892.—Hampson, Moths of India, i. 155.

Type *C. furcula* Schrank. Congeneric are *liturata* Walk., *prasana* Moore, *multiscripta* Riley, *scitiscripta* Walk., *occidentalis* Lintner, *herminea* Goeze (= *bifida* Brahm.) and *erminea* Esp., which latter belongs here in venation in spite of its evident close affinity to *Andria vinula*.

The larvæ have the anal feet converted into flagella throughout life.

Genus **ANDRIA** Hübner.

1806.—*Andria* Hübner, Tentamen.
1829.—*Dicranura* Boisduval, Ind. Meth. 54.
1892.—*Dicranura* Hampson, Moths of India, i. 157.

Type *A. vinula* Linn. *A. himalayana* Moore is congeneric.

The larvæ are as in *Cerura*.

Genus **ANTICYRA** Walker.

1855.—*Anticyra* Walker, Cat. Brit. Mus. v. 1091.
1855.—*Dinara* Walker, Cat. Brit. Mus. vii. 1699.
1892.—*Anticyra* Hampson, Moths of India, i. 144.

Type and sole species, *A. combusta* Walker.

The larva is blue-green with black head and "a few long hairs."

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Genus **CHADISRA** Walker.

1862.—Walker, Trans. Ent. Soc. Lond. (3) i, 81.
1892.—Hampson, Moths of India, i, 159.

Type and sole species, *C. bipars* Walk.

The larva has a red tubercle on the eighth abdominal segment, is greenish white with pale green, oblique, lateral lines, and a yellow dorsal line.

Genus **HYPARPAX** Hübner.

1824.—*Hyparpax* Hübner, Samml. Exot. Schmett. ii.
1860.—*Sangata* Walker, Cat. Brit. Mus. xx, 265.
1894.—*Hyparpax* Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 186.

Palpi porrect, exceeding the front, vein 5 from the middle of the cross-vein, a long accessory cell, vein 10 arising from it; 6 from beyond the end of cell; 6 and 7 of secondaries stalked.

Type *H. aurora* Smith and Abbot. The other species are *venus* Neum. and *perophoroides* Strecker.

The larva has a furcate process on the first and eighth abdominal segments and is colored brown and green, closely resembling the species of *Schizura*.

Genus **SCHIZURA** Doubleday.

1841.—*Schizura* Doubleday, Entomol. i, 59.
1864.—*Oedemasia* Packard, Proc. Ent. Soc. Phil. iii, 359.
1864.—*Cœlodasys* Packard, Proc. Ent. Soc. Phil. iii, 363.
1865.—*Hatima* Walker, Cat. Brit Mus. xxxii, 450.
1894.—*Schizura* Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 201.

Palpi moderate, porrect, not exceeding the vestiture of the front. Head diffusely tufted at vertex; anal tuft bifid in the male, but often short and not conspicuous. Wings rather elongate; a long, narrow accessory cell; vein 6 from its under side, 10 from above; 5 from near the middle of the cross-vein, rather weak on secondaries. Male antennæ shortly pectinated on the basal two-thirds; female simple.

Type *S. ipomœæ* Doubld. The other species are *concinna* Sm. and Abb. (type of *Oedemasia* and *Hatima*), *eximia* Grote, *perangulata* Hy. Edw., *unicornis* Sm. and Abb. (type of *Cœlodasys*), *apicalis* G. and R., *badia* Pack., *leptinoides* Grote.

The larvæ are brown and green, with humps on the first and eighth abdominal segments, all protectively colored except *concinna*, which is gregarious and conspicuously marked.

Genus **IANASSA** Walker.

1855.—*Ianassa* Walker, Cat. Brit. Mus. v, 1101.
1864.—*Xylinodes* Packard, Proc. Ent. Soc. Phil. iii, 366.
1887.—*Phya* Druce, Biol. Cent.-Am. Lep. Het. i, 242.
1894.—*Ianassa* Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 200.

Palpi moderate, exceeding the front, head with a diffuse tuft. Wings long, a

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slight tuft on internal margin, outer margin crenulate; venation as in *Schizura* Male antennæ fasciculate on the basal two-thirds; female simple.

Type *I. lignicolor* Walk. The other species is *coloradensis* Hy. Edw.

The larvæ closely resemble *Schizura* and *Hyparpax*.

Genus **EUHYPARPAX** Beutenmüller.

1893.—Beutenmüller, Bull. Am. Mus. Nat. Hist. v, 19.
1894.—Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 204.

Palpi short, vertex of head not tufted, vein 6 from the end of the cell, 10 from the end of the accessory cell, which is rather short; on secondaries veins 6 and 7 on a short stalk.

Type and sole species, *E. rosea* Beut.

Genus **HETEROCAMPA** Doubleday.

1841.—*Heterocampa* Doubleday, Entom. i, 55.
1841.—*Lochmæus* Doubleday, Entomol. i, 57.
1855.—*Tadana* Walker, Cat. Brit. Mus. v, 990.
1855.—*Cecrita* Walker, Cat. Brit. Mus. v, 992.
1865.—*Misogada* Walker, Cat. Brit. Mus. xxxii, 449.
1868.—*Seirodonta* Grote and Robinson. List Lep. N. Am. 1.

Palpi short, hairy, scarcely exceeding the front; no distinct anal tuft; venation as in *Schizura;* male antennæ shortly, or rather lengthily pectinated on basal two-thirds; female simple.

Type *H. astarte* Doubld. The other species are *obliqua* Pack., *chapmani* Grote, *lunata* Hy. Edw., *umbrata* Walk., *manteo* Doubld, (type of *Lochmæus* and *Tadana*), *subrotata* Harv., *belfragei* Grote, *biundata* Walk., *guttivitta* Walk. (type of *Cecrita*), *bilineata* Pack. (type of *Seirodonta*) and *cinerea* Pack. (type of *Misogada*).

The characters used to divide this genus seem of insufficient value in comparison with the other genera here treated.

The larvæ are smooth, green, without humps and are variously marked; frequently some of the tubercles are hypertrophied, especially in the earliest stages.

Genus **LITODONTA** Harvey.

1876.—Harvey, Can. Ent. viii. 5.
1894.—Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi. 208.

Closely related to *Heterocampa*, but differs in the female antennæ being pectinate and the somewhat different facies. I have included it with *Heterocampa* in the synopsis given above.

Type and sole species, *L. hydromeli* Harv.

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Genus **DASYLOPHIA** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. iii, 362.
1894.—Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 200.

Palpi long, obliquely ascending, exceeding the vestiture of the front. Head with an erect tuft, most distinct in the type; anal tuft short, scarcely bifid; venation as in *Schizura*, but the accessory cell shorter and sometimes degenerate.

Type *D. anguina* Sm. and Abb. Also *thyatiroides* Walk.

The larva is smooth, brightly marked with longitudinal lines.

Genus **SYMMERISTA** Hübner.

1818.—*Symmerista* Hübner, Verz. bek. Schmett. 248.
1855.—*Edema* Walker, Cat. Brit. Mus. v, 1028.

Palpi and head tufts as in *Dasylophia*, anal tuft slight, simple. Male antennæ shortly pectinated at basal two-thirds; of female, simple; vein 5 arises above the middle of the cell, accessory cell small, 6 from its apex, 10 from beyond it; on secondaries veins 6 and 7 from a long stalk, 8 close to 7 to near end of cell.

Type *S. albifrons* Sm. and Abb. Also *packardii* Morrison.

The larva is smooth, shining, with conspicuous longitudinal lines.

Genus **SOMERA** Walker.

1855.—Walker, Cat. Brit. Mus. iv, 882.
1892.—Hampson, Moths of India i, 153.

Type and sole species, *S. viridifusca* Walk.

Genus **NERICE** Walker.

1855.—Walker, Cat. Brit. Mus. v, 1076.
1894.—Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 187.

Palpi ascending, hairy below, exceeding the front. Head not tufted; a high crest on thorax; no anal tuft; vein 5 from the middle of the cross-vein, accessory cell long, 6 from its under side, 10 from just beyond its tip; veins 3 and 4 of secondaries separate, 6 and 7 stalked; antennæ pectinated to the tip in both sexes.

Type and sole species, *N. bidentata* Walker.

The larva is whitish with oblique green lines on the sides, a double-tipped hump on each abdominal segment.

Genus **NADATA** Walker.

1855.—*Nadata* Walker, Cat. Brit. Mus. i, 1062.
1869.—‖ *Alastor* Boisduval, Ann. Ent. Soc. Belg xii, 87.
1894.—*Nadata* Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 185.

Palpi short, porrect; thorax with a high crest; no anal tuft; vein 5 from the center of the cross-vein, accessory cell moderate, 6 from its lower side very near base, 10 from beyond the tip; on secondaries veins 6 and 7 stalked; outer margin of primaries even, but crenulate.

Type and sole species, *N. gibbosa* Sm. and Abb.

The larva is smooth, green, covered with white granular dots.

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Genus **CLEAPA** Walker.

1855.—Walker, Cat. Brit. Mus. v, 1036.
1892.—Hampson, Moths of India i. 171.

Type and sole species, *C. latifascia* Walk.

Genus **HAPIGIA** Guenée.

1852.—Guenée, Noct. ii. 376.
1892.—Hampson. Moths of India i. 129.

Type *H. nodicornis* Guen. Also *H. obliqua* according to Hampson.

Genus **EUNYSTALEA** Grote.

1895.—Grote, Abh. Naturw. Vereins zu Bremen, xiv, 7.

Vein 5 from near middle of cross-vein, 6–9 stalked, 10 from the cell, no accessory cell; on secondaries veins 3 and 4 from the lower angle of the cell, 6 and 7 short stalked.

Type and sole species, *E. indiana* Grote.

(South American material has not been adequately compared.)

Genus **MEGACERAMIS** Hampson.

1892.—Hampson, Moths of India i, 167.

Type and sole species, *M. lamprolepis* Hampson.

Genus **LOPHODONTA** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. iii, 357.
1894.—Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 196.

Palpi moderate, reaching the front; a tufted tooth on internal margin of primaries; accessory cell absent, veins 6–10 stalked, 5 from the middle of the cross-vein; antennæ simple in both sexes.

Type *L. ferruginea* Pack. Also *angulosa* Sm. and Abb.

The larvæ are smooth, green, with inconspicuous longitudinal lines.

Genus **PTILOPHORA** Stephens.

1828.—Stephens, Ill. Brit. Ent. Haust. ii, 29.

Palpi short, concealed; a tuft on the head. Wings more sharply angled at apex than usual, thinly scaled, a tuft of hair on the internal margin of primaries; vein 5 from the center of the cross-vein, 6 from the end of the cell, 7–10 on a stalk. Male antennæ with very long pectinations; of female, serrate.

Type and sole species, *P. plumigera* Esper.

The larva is smooth, resembling that of *Lophodonta*.

Genus **PHEOSIA** Hübner.

1818.—*Pheosia* Hübner, Verz. bek. Schmett. 145.
1828.—*Leiocampa* Stephens, Ill. Brit. Ent. Haust. ii, 24.
1892.— || *Notodonta* Hampson, Moths of India i, 162.

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Palpi very short; hairs at base of thorax slightly tufted; venation as in *Lophodonta*; antennæ pectinated in both sexes, but the pectinations shorter in the female.

Type *P. tremula* Clerck (= *dictæa* Esp.). The other species are *gnoma* Fab. (= *dictæoides* Esp.), *dimidiata* H.-S., *portlandia* Hy. Edw., *albifascia* Moore, and probably also *gigantea* Elwes, *moorei* Hamps., *sikkima* Moore and *rufa* Hamps.

The larvæ are smooth, shining, with a horn on the eighth abdominal segment.

Genus **OCHROSTIGMA** Hübner.

1818.—*Ochrostigma* Hübner, Verz. bek. Schmett. 146.

1844.—*Drynobia* Dupont, Cat. Lep. Eur. 93.

Palpi short, wings broad, a large tooth on internal margin of primaries; thoracic tuftings rather distinct. Male antennæ pectinated; female simple.

Type *O. velitaris* Hufn. Also *O. obliterata* Esp. (= *melagona* Borkh.).

The larvæ resemble those of *Lophodonta* in general characters.

Genus **NOTODONTA** Ochsenheimer.

1810.—*Notodonta* Ochsenheimer, Schmett. Eur. iii, 45.

1828.—*Peridea* Stephens, Ill. Brit. Ent. Haust. ii, 22.

1895.—*Chatfeldia* Grote, Abh. Natur. Vereins zu Bremen xiv, 7.

Palpi short, wings rather elongate, tuft on internal margin of primaries moderate. Male antennæ shortly pectinated; female simple.

Type *N. dromedartus* Linn. The other species are *ziczac* Linn., *phœbe* Scriba (= *torva* Hübn.), *tritophus* Esp., *anceps* Goeze (= *trepida* Esp.) (type of *Peridea*), *basitriens* Walk. (type of *Chatfeldia*) and *simplaria* Graef.

The larva of the type has humps on abdominal segments 1, 2, 3, 4 and 8, and is largely green; *tritophus* has the humps on segments 1, 2, 3 and 8, and is whitish; *ziczac* and *phœbe* have the humps on segments 2, 3 and 8, and are purple-brown, while *anceps* is entirely smooth, green, with white and red marks.

Genus **DRYMONIA** Hübner.

1818.—*Drymonia* Hübner, Verz. bek. Schmett. 144.

1828.—*Chaonia* Stephens, Ill. Brit. Ent. Haust. ii, 29.

Wings longer than in *Notodonta*, the tooth on internal margin of primaries nearly obsolete—a tiny tuft of scales. Male antennæ with longer pectinations than in *Notodonta*; female simple.

Type *D. trimacula* Esp. (= *dodonæa* Hübn.). The other species are *D. ruficornis* Hufn. (= *chaonia* Hübn.), *querna* Fab.

The larvæ are entirely smooth, green, with inconspicuous longitudinal lines.

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Genus **EUHAMPSONIA** n. gen.

1892.— || *Nadata* Hampson, Moths of India i, 130.

The characters are given by Hampson. This genus differs from *Nadata* in the presence of a tuft on the internal margin of primaries, vein 6 arising considerably beyond the angle of the cell, the pectinations of the antennæ short and reaching but two-thirds of the length, the outer margin very irregular instead of crenulate.

Type and sole species, *E. niveiceps* Walk.

Genus **PTILODON** Hübner.

1806.—*Ptilodon* Hübner, Tentamen.

1829.—*Lophopteryx* Stephens, Ill. Brit. Ent. Haust. ii, 26.

1892.—*Lophopteryx* Hampson, Moths of India i, 166.

Type *P. capucina* Linn. (= *camelina* Linn.). The other species are *cucullina* Den. and Schif., *americana* Harv., *saturata* Walk., *atrofusca* Hamps., *flavistigma* Moore, and *ferruginosa* Moore.

The larva of the type is green with two horn-like processes on the eighth abdominal segment (tubercle i); in *cucullina* there is a slight single hump on the first and eighth abdominal segments.

Genus **ODONTOSIA** Hübner.

1818.—Hübner, Verz. bek. Schmett. 145.

1892.—Kirby, Cat. Lep. Het. i. 604.

Differs from *Ptilodon* in lacking the thoracic crest. Male antennæ pectinate or simple. Differs from *Hyperæschra* in the crenulate outer margin of primaries.

Type *O. carmelita* Esp. Here also will come *O. elegans* Strecker.

The larva of the type is smooth, green, inconspicuously marked.

Genus **HYPERÆSCHRA** Butler.

1880.—Butler, Ann. Mag. Nat. Hist. (5), vi, 65.

1892.—Hampson, Moths of India i. 163.

The male antennæ are shortly pectinate; female pectinate or ciliate.

Type *H. pallida* Butler. The other species are *basistriga* Moore, *tenebrosa* Moore, *basalis* Moore, *nigribasis* Hamps., *dentata* Hamps., *stragula* Grote, *pacifica* Behr, *tortuosa* Tepp., *georgica* H.-S., *? variegata* Moore.

The larva of *stragula* closely resembles that of *Notodonta ziczac;* the others are unknown.

Genus **MICRODONTA** Dupont.

1844.—*Microdonta* Dupont. Cat. Lep. Eur. 92.

1895.—*Hierophanta* Meyrick, Handb. Brit. Lep. 310.

Palpi slender, closely haired; thorax with rough hairs; venation as in *Ptilodon;*

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tooth on primaries smaller than in *Hyperæschra*. Male antennæ fasciculate-serrate; female simple. Wings and body white.

Type and sole species, *M. bicolora* Den. and Schiff.

Larva smooth, inconspicuously marked.

Genus **APELA** Walker.

1855.—Walker, Cat. Brit. Mus. v, 1092.
1892.—Hampson, Moths of India i, 168.

Type and sole species, *A. divisa* Walk.

Genus **PTEROSTOMA** Germar.

1812.—*Pterostoma* Germar, Syst. Gloss. Prodr. ii, 42.
1828.—*Ptilodontis* Stephens, Ill. Brit. Ent. Haust. ii, 28.
1829.—*Orthorinia* Boisduval, Ind. Meth. 56.

Palpi very long, obliquely ascending, flattened; male with a furcate anal tuft; a tufted tooth on the internal margin of primaries and a tuft on the outer angle; venation much as in *Ptilodon*, 6 arising from the under side of the accessory cell, 7–10 stalked; antennæ pectinate in both sexes.

Type and sole species, *P. palpinum* Clerck.

The larva is smooth, and so like that of *Lophodonta angulosa*, as, perhaps, to be mistaken for it.

Genus **SPATALIA** Hübner.

1818.—*Spatalia* Hübner. Verz. bek. Schmett. 145.
1855.—*Rosama* Walker, Cat. Brit. Mus. v, 1066.
1862.—*Caschara* Walker, Journ. Linn. Soc. Lond. vi, 1336.
1862.—*Allata* Walker, Journ. Linn. Soc. Lond. vi, 140.
1864.—*Celeia* Walker, Cat. Brit. Mus. xxxii, 463.
1892.—*Spatalia* Hampson, Moths of India i, 168.

The antennæ of the male may have the pectinations short or long.

Type *S. argentina* Den. and Schiff. The other species are *argentifera* Walk. (type of *Allata* and *Celeia*), *gemmifera* Moore, *costalis* Moore, *argentata* Moore, *albifascia* Hampson, *auritracta* Moore, *plusioides* Moore, *strigosa* Walk. (type of *Rosama*), *punctifera* Walk. (type of *Caschara*).

The larva of the type is smooth, noctuidous in appearance, with slight brown elevations on the first abdominal segment.

Genus **BESAIA** Walker.

1864.—Walker, Cat. Brit. Mus. xxxii, 458.
1892.—Hampson, Moths of India i, 171.

Type and sole species, *B. rubigena* Walk.

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Genus **TARSOLEPIS** Butler.

1872.—Butler, Ann. Mag. Nat. Hist. (4) x, 125.
1892.—Hampson, Moths of India i, 126.

Type *T. sommeri* Hübn. (= *remicauda* Butl.). Also *T. fulgurifera* Walk.

Genus **DUDUSA** Walker.

1864.—Walker, Cat. Brit. Mus. xxxii, 446.
1892.—Hampson, Moths of India i, 128.

Type *D. nobilis* Walk. Also *D. sphingiformis* Moore.

Family MELALOPHIDÆ (Hübner).

1806.—*Melalophæ* Hübner, Tentamen.
1818.—*Melalophæ* Hübner, Verz. bek. Schmett. 162.
1895.—*Melalophidæ* Grote, Syst. Lep. Hildesiæ.

This group has been usually placed with the Notodontidæ (Ptilodontidæ). Recently Mr. Hampson removed *Thaumetopœa* (*Cnethocampa*), placing it in the Eupterotidæ and was followed by Mr. Schaus with *Apatelodes*, and Mr. Grote with *Phalera*. I shall include all the hairy Ptilodonts whose larvæ are known, with the remark that some of the Indian genera now included in the Ptilodontidæ will be found to belong here when their life histories are worked out.

Genus **THAUMETOPŒA** Hübner.

1818.—*Thaumetopœa* Hübner, Verz. bek. Schmett. 185.
1828.—*Cnethocampa* Stephens, Ill. Brit. Ent. Haust. ii, 46.
1871.—*Traumatocampa* Wallengren, Skand. Het. ii, 158.
1892.—*Thaumetopœa* Kirby, Cat. Lep. i. 591.
1892.—*Cnethocampa* Hampson, Moths of India i, 64.

Type *T. processionea* Linn. Also *pityocampa* Den. and Schiff., *pinivora* Treitschke (type of *Traumatocampa*) and *cheela* Moore.

The larvæ have distinct bunches of hair arising from warts besides fine secondary hairs.

Genus **ANTHEUA** Walker.

1855.—Walker, Cat. Brit. Mus. iii, 766.
1892.—Kirby, Cat. Lep. Het. i, 582.
1892.—Hampson, Moths of India i, 145.

Type *A. simplex* Walk. Also *servula* Dru. and *tricolor* Walk.

The larva of *servula* is brown with a lateral yellow line and paired subdorsal and sublateral red spots.

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Genus **DATANA** Walker.

1855.—Walker, Cat. Brit. Mus. v, 1060.
1894.—Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 197.

Type *D. ministra* Drury. The other species are *angusii* G. and R., *californica* Riley, *drexelii* Hy. Edw., *major* G. and R., *palmii* Beut., *floridana* Graef., *modesta* Beut., *perspicua* G. and R., *robusta* Streck., *integerrima* G. and R., *chiriquensis* Dyar and *contracta* Walk.

The larvæ have the warts reduced, scarcely distinguishable from the secondary hair. They are black, longitudinally banded with yellow or white, the bands usually continuous.

Genus **PHALERA** Hübner.

1818.—*Phalera* Hübner, Verz. bek. Schmett. 146.
1832.—*Acrosema* Meigen, Eur. Schmett. iii, 24.
1851.—*Hammatophora* Westwood, Brit. Moths i, 63.
1892.—*Phalera* Kirby, Cat. Lep. Het. i, 575.
1892.—*Phalera* Hampson, Moths of India i, 133.

Type *P. bucephala* Linn. The other species are *bucephaloides* Ochs., *parivala* Moore, *sangana* Moore, *torpida* Walk., *procera* Felder and *raya* Moore.

The larva of the type is similar to *Datana*, the lines broken by transverse shades. Other species are considerably modified from this pattern of coloration, e. g. *bucephaloides* and *raya*.

My example of *parivala* differs from the type in having the accessory cell stalked nearly as far as the origin of vein 6. The crossbar at the end of the accessory cell is faint in one wing and absent in the other, so that the accessory cell is really absent. Hampson's figure of *parivala* is, however, normal, and I can only regard my example as an aberration.

Genus **MELALOPHA** Hübner.

1806.—*Malalopha* Hübner, Tentamen.
1818.—*Ichthyura* Hübner, Verz. bek. Schmett. 162.
1828.—*Clostera* Stephens, Ill. Brit. Ent. Haust. ii, 12.
1862.—*Gaugamela* Walker, Journ. Linn. Soc. Lond. vi, 138.
1892.—*Melalopha* Kirby, Cat. Lep. Het. i, 609.
1892.—*Ichthyura* Hampson, Moths of India i, 172.
1894.—*Melalopha* Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 190.

Type *M. curtula* Linn. The other species are *anachoreta* Fab., *anastomosis* Linn., *pigra* Hufn. (= *reclusa* Fab.), *apicalis* Walk., *inclusa* Hübn., *strigosa* Grote, *albosigma* Fitch, *brucei* Hy. Edw., *undulata* Hamps., *ferruginea* Moore, *costicomma* Hamps., *cupreata* Butl., *atrifrons* Walk., *restitura* Walk.

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The larvæ are slightly flattened, finely hairy, the warts inconspicuous; small fleshy humps on the first and eighth abdominal segments. The markings are composed of modified longitudinal lines

Genus **PYGÆRA** Ochsenheimer.

1810.—Ochsenheimer, Schmett. Eur. iii. 224.
1818.—Hübner, Verz. bek. Schmett. 162.
1892.—Kirby, Cat. Lep. Het. i. 611.

Type and sole species, *P. timon* Hübn.

The larva is ash-gray with reddish warts and gray hairs.

Genus **APATELODES** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. iii. 353.
1894.—Neumoegen and Dyar, Trans. Am. Ent. Soc. xxi, 183.

Type *A. torrefacta* Abb. and Smith. Also *A. angelica* Grote and some Mexican species.

The larva of the type is evenly hairy, the warts suppressed, the secondary hairs very long and abundant. There are also some black tufts. The larva of *angelica* is more generalized, short haired, uniformly gray, simulating the bark of the trees on which it lives.

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NEW NORTH AMERICAN NEUROPTEROID INSECTS.

BY NATHAN BANKS.

PERLIDÆ.

Chloroperla marginata n. sp.—Length 10 mm. Yellowish, head not broader than the prothorax, yellow, ocelli and eyes black; antennæ yellowish at base, darker beyond; the ocelli form a triangle a little broader behind than long; prothorax yellow, a little obscure in the middle, sides very convex and narrowly but distinctly black, only slightly rugose within, once and a third broader than long, all angles much rounded; thorax yellow, scutel margined with black behind. Abdomen yellow, darker along the middle, setæ pale. Legs yellowish. Wings yellowish, veins yellow, transversals at end of discal cells disjointed, upper branch of radial sector nearly twice as long as the pedicel beyond the transversals, about five transversals between the cubiti.

Two specimens from Colden, N. Y. [E. P. Van Duzee.] Allied to *C. pacifica* by black margined prothorax, but separated by the convex sides.

Nemoura coloradensis n. sp.—Length 8.5 mm., alar expanse 15 mm. Black, abdomen somewhat paler on the sides and below. Legs testaceous, blackish at knees, hind femora very distinctly banded with black at tips, tarsi blackish, no yellow on head nor prothorax, shining, both sparsely clothed with fine white pile. Wings hyaline at base, blackish on pterostigma and obliquely below to the cubitus, beyond and above the cubital fork gray, veins black; prothorax nearly square, rugulose; subcosta of fore wings before running into the radius touches the costa (in other species there is a cross-vein, though often very short), sector of cubitus arising from cubitus, but slightly curved.

One specimen, Ft. Collins, Col. [C. P. Gillette.] Known by its black tipped hind femora and dark apical part of wing.

Nemoura cinctipes n. sp.—Length ♂ 10 mm.; ♀ 12 mm.; alar expanse 22 mm. Black, legs pale, except dark bands at bases and tips of femora and tibiæ, most distinct on the hind pair. Wings pale, with black veins, a large discal spot, a curved band beyond and extreme tip fuscous. Head and thorax covered with pale pile, prothorax faintly margined with yellow in front, about as long as broad behind, plainly broader in front, slightly rugose above; radial sector not much bent down at base, sector of cubitus plainly sinuous.

Several specimens, Olympia, Wash. [T. Kincaid], February, March and May. Readily known by the distinctly banded legs.

Nemoura venosa n. sp.—Length: ♂, 6 mm.; ♀, 7 mm.; alar expanse 13 mm. Head and thorax black; legs pale, except posterior femora, which are mostly black; antennæ fuscous. Wings pale, with black veins, margined with fuscous, less distinct in the ♂; head and thorax clothed with pale pile, prothorax

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not margined with pale, distinctly broader behind than long, scarcely narrower behind, hardly rugose above; radial sector but little bent down at base, sector of cubitus arising from cubitus, slightly bent down at tip.

Colden, N. Y., July 6 [E. P. Van Duzee]. Small size and margined veins separate it from the other species known to me.

ARSAPNIA n. gen.

Resembles *Capnia* and also *Nemoura*. But few transverse veins, the costal ones like *Nemoura*, an oblique one beyond the tip of the subcosta; in the cubital area there is no series of transverse veinlets as in *Nemoura*, but only two between the cubiti and one behind, in this respect like *Capnia;* below the end of the subcosta the two veins do not arise from the radial sector, but from the transverse veinlet; and the second vein behind them arises from the transverse veinlet instead of from the cubitus as in *Nemoura;* palpi short, last joint short, cylindric; three small ocelli. Wings not involuted, anal area of hind pair large, folded; second tarsal joint much shorter than the two others; two setæ. It differs from *Capnia* in the longer apical cells, finer veins, and in the oblique veinlet beyond the tip of subcosta.

Type *Arsapnia decepta.*

Capnia vernalis Walk. very possibly goes in this genus, as it is stated to have venation much like *Nemoura;* the description does not, however, apply to *A. decepta*, which differs in the pale setæ, etc.

Arsapnia decepta n. sp.—Length 6.5 8.5 mm.; alar expanse 11-15. Black, legs rather paler, and the setæ much lighter in color. Wings grayish with black veins, rather darker at basal end of pterostigma. Head and thorax clothed with whitish pile; no pale on prothorax; body and legs quite hairy; head rather broader than prothorax, the latter a little broader than long, scarcely narrower behind and faintly rugulose above; wings rounded at apex, second apical cell ten to twelve times as long as broad, the posterior basal transverse vein continuous across the post-cubitus, the sector from cubitus, or rather from the transverse veinlet, quite suddenly bent downward at tip; setæ nearly as long as the abdomen; in the ♂ there is a prominent tubercle before the tip, upon which the apex of the bifid genital organ rests when reflexed.

Four specimens, Ft. Collins, Col. [C. P. Gillette].

SIALIDÆ.

Sialis concava n. sp.—Length 10-12 mm. Black, head with some ferruginous smooth spots; wings blackish, sometimes the apex more hyaline, veins black; structure almost identical with *S. infumata*, but the head between the eyes is plainly concave [in *S. infumata* it is convex] and the median pair of smooth spots are much shorter than in that species; the venation presents no constant differences.

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Several specimens, Ithaca, N. Y.; one Sherbrooke, Canada (Begin); three with basal fuscous clouds to wings from Concord, N. Y., and Ridgeway, Ontario, Canada [E. P. Van Duzee].

MANTISPIDÆ.

Mantispa floridana n. sp.--Length to tip of wings 34 mm. Rufous, face yellow, a dark median stripe, narrow below the antennæ, rather broader on labrum, much broader above the antennæ and enclosing two yellow spots, dark spot each side above near the eyes; prothorax uniform rufous, anterior tubercles yellow, two triangular yellow spots at posterior end, continued into two stripes on mesothorax, below the origin of fore wings a yellow semi-circular mark, connected to a median, triangular, yellow spot below, above the latter a short spot each side, a similar semi-circle below the hind wings; membrane of joints of legs yellow. Abdomen with a broad black stripe each side, margined with yellow, a narrower stripe above, ventral segments margined with yellow, two spots toward base. Wings hyaline, in both pairs a rufous streak between the subcosta and radius, and continued to the apex of the wing, fifteen to sixteen discoidal areolets, anal vein furcate; large spine on femur i plainly less than width of the joint at that point. Abdomen large, broad in the middle, constricted at base.

One specimen from Lake Worth, Florida, in the collection of Mrs. A. T. Slosson.

Mantispa sayi n. sp.—Length to tip of wings 17-22 mm. Pale yellowish, face pale, above the antennæ reddish stripes, below is a transverse reddish band, tips of palpi and antennæ fuscous, the latter as long as breadth of the head; prothorax pale, reddish at each anterior corner, and a short basal red stripe which extends back over the meso- and metathorax, long, slender, with many transverse folds, and at each side anteriorly a tubercle. Abdomen yellowish, darker on the venter, a narrow dark red stripe above and one each side. Legs yellowish, anterior pair darker than others. Wings hyaline, veins fuscous, in both wings a red streak between the subcosta and radius to the pterostigma, ten to eleven discoidal areolets, anal vein not furcate, the long spine on femur i is almost as long as the width of the joint at that point.

Three specimens, two from Lake Worth, Florida (Mrs. Slosson); the other from Texas. One of the Florida specimens is much darker than the others.

Of the six described species of *Mantispa*, four are known to me, the two others may be separated on colorational characters.

1. Wings wholly fuscous ..... **moesta.**
   Wings not wholly fuscous ..... 2.
2. Veins with black dots ..... **viridis.**
   Veins not dotted ..... 3.
3. Anal vein simple in fore wing ..... 4.
   Anal vein furcate in fore wing ..... 5.
4. A spot at apex of wing and two below radius ..... **interrupta.**
   No such spots present ..... **sayi.**
5. Anterior half of wing wholly fuscous ..... **brunnea.**
   Space between radius and subcosta only dark ..... **floridana.**

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HEMEROBIIDÆ.

Berotha texana n. sp.—Length 9 mm. Face pale yellowish, vertex dotted with black, especially near the eyes, palpi reddish, antennæ pale yellow; prothorax short, highest in the middle line, crossed by two furrows, dull yellowish, with fuscous dots; meso- and metathorax still darker. Abdomen blackish. Legs pale, with fuscous dots; body and legs clothed with short white hairs, and long black and some white bristles. Wings narrow, hyaline, excised below tip which is acute, hind wings much less so than in *M. flavicornis*, veins fuscous, dotted with white, along the costal margin are three or four more prominent dark spots before the pterostigma, the latter is fuscous; fringe on fore wings interruptedly white and gray, on hind wings gray, transverse veins fuscous, five branches to the radial sector.

Two specimens, Central Texas. Differs from *B. flavicornis* in smaller size, darker colors, costal spots, etc.

HEMEROBIUS.

A large number of species have been described, most of them, however, closely related. They have been arranged in three groups, according to the number of sectors to the radius.

Group I.—Two sectors.

Two species, both described by Fitch, belong here, *H. amiculus* and *H. occidentalis*, the former I have from Long Island, N. Y., the latter from Colorado.

Group II.—Three sectors.

Here belong the great majority of species, only a few of which I have been able to identify. They can be arranged in two sections.

Section A.—The cubitus bent toward the post-cubitus, thus making one of the connecting veinlets shorter than the other; usually no veinlet connecting cubitus and first sector.

Hemerobius castaneæ Fitch.

This is a very common species, and doubtless described by Walker. The genitalia come nearest to the European *H. micans*, as figured by McLachlan, but the superior branch is rather longer and sharp pointed. It is not the *H. humuli*.

Hemerobius stigmaterus Fitch.

Less common than the preceding. Very close to the European *H. limbatus* Waesm., and probably identical. According to McLachlan two of Walker's species from the United States, *H. obliteratus* and *H. crispus* are *H. limbatus*.

Hemerobius pacificus n. sp.—Alar expanse 19 mm. Head pale, a brown stripe below each eye, and a line at base of antennæ, the latter pale, thorax pale, hardly brown each side, legs and abdomen pale, veins of wings pale

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with scattered light brown dots, some of those near the base darker brown: these dots give off indistinct oblique clouds, gradate veinlets mostly brown, clouded to form an indistinct band, border with groups of brown dots, pterostigma indistinct. Wings rather broad, pointed at tip, costal space narrow toward base, cubitus much bent toward post-cubitals, no connecting veinlet from upper branch of cubitus to the radius or first sector, three sectors, upper branch of the third forked before the inner gradate series, lower branch simple, five gradate veinlets of inner series, the last beyond the next to the last, six gradate veinlets in outer series, hind wings not marked, veins pale, except a few of the outer gradate ones. The appendages of this species are stouter than those of *H. castaneæ*, and when seen from above the inner branch is shorter.

Two specimens, Olympia, Wash. [T. Kincaid].

Hemerobius mœstus n. sp.—Alar expanse 17 mm. Head pale, a brown stripe below each eye, antennæ and legs pale, thorax pale, hardly brown on the sides. Abdomen rather obscure, veins of wings pale, with scattered, light brown dots, dots around border, gradate veinlets brown and margined with brown, pterostigma reddish in both pairs of wings. Wings rather narrow, rounded at tip, costal area narrow toward base, cubitus much bent toward post-cubitus, no connecting veinlet from its upper branch to the radius or first sector, three sectors, the upper branch of third forked just before inner gradate series, the lower branch is simple, six gradate veinlets in both series, the last of the inner series slightly before the next to last; hind wings not marked, veins pale.

One specimen from Olympia, Wash. [T. Kincaid]. Close to the Eastern *H. stigmaterus*, but appears to be distinct.

Hemerobius venustus n. sp.—Alar expanse 22 mm. Head blackish, a pale spot on the labrum and above the antennæ, latter pale, thorax pale, a brown stripe each side, legs pale, the abdomen fuscous, wings with pale veins and brown dots, these dots often surrounded by little clouds, those on the veinlets connecting cubiti form a large and prominent spot, and on the gradate veinlets they form a continuous band, gradate veinlets brown, border of wing rather obscure, and with alternating dots, pterostigma hardly distinct. Wings not broad, tip scarcely pointed, costal area rather narrow toward base; cubitus distinctly bent toward the post-cubitus, but not as much as in many species, a connecting veinlet between cubitus and radius at the origin of the first sector; three sectors, upper branch of the third forked twice before the outer series of gradate veinlets, the lower branch is simple; six gradate veinlets of inner series, the last basad of the next to the last, six in outer series; hind wings not marked, the costal and some of the gradate veinlets brown.

One specimen, Mt. Washington, N. H. (Mrs. A. T. Slosson). A very handsome species.

Section B.—The cubitus straight, not bent toward the post-cubitus, the two connecting veinlets are thus of nearly equal length; a veinlet connecting cubitus and the first sector of the radius.

Hemerobius disjunctus n. sp.—Alar expanse 21 mm. Head black, with two pale spots above, antennæ pale, thorax pale, blackish on the sides, and some dark, almost connected, spots on the middle. Abdomen blackish. Legs

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pale, darker toward the tips of the femora and the bases and tips of anterior tibiæ. Wings with black veins interrupted with white, three dark spots on the posterior margin, all tending to form bands, the last one at about middle of wing and longer than the others, some clouding near the pterostigma, and on the outer series of gradate veinlets, the border marked with long black spots covering several veinlets, between the spots white, pterostigma obscure, cross-veins all black; wings rather slender, almost pointed at the tip, radius and subcosta rather close together, connected near base by a veinlet; cubitus straight, not curving toward post-cubitus, the connecting veinlets each way of nearly equal length, a veinlet connecting cubitus and first sector; three sectors, the third forked twice before the outer series of gradate veinlets; five gradate veinlets of the inner series, the last one coinciding with the next to last, seven in the outer series, second postcostal cell closed; hind wings not marked, veins black.

Two specimens, one from Mt. Washington, N. H. (Mrs. A. T. Slosson), the other from Sherbrooke, Canada (L'abbé P. A. Bégin), September.

Hemerobius coloradensis n. sp.—Alar expanse 18 mm. Head pale yellowish, a brown spot under each eye, and a larger one below the antennæ with branches upward around the sockets; antennæ pale yellowish, a brown stripe on the outer side of basal joint; thorax pale, in one specimen with a brown stripe each side; legs pale yellowish. Abdomen fuscous. Wings hyaline, veins white with brown dots, gradate veinlets brown, slightly clouded, more distinctly on the last two of the inner series, each brown dot gives off each side an oblique mark, which meeting, form small V marks, brown dots around border of wing, pterostigma indistinct; wings rather broad, tip rounded, costal area broad at base, subcosta and radius close together, connected near base: cubitus straight, not bending toward post-cubitus, the connecting veinlets each way nearly equal, a veinlet connecting cubitus and first sector: three sectors, upper branch of third forked again before the outer series of gradate veinlets, lower simple: six gradate veinlets of inner series, last one basad of the next to last, five or six in outer series; second post-costal cell closed; hind wings not marked, veins pale.

Two specimens, Ft. Collins, Col.; sent by Mr. C. F. Baker.

Hemerobius canadensis n. sp.—Alar expanse 12 mm. Head pale yellowish, black under the eyes, brown above each side, continued back upon the thorax; legs and abdomen pale yellowish; antennæ similar, darker towards tips; wings hyaline, veins hyaline, dotted with uniform light brown, cross-veinlets not darker, margin with similar brown points; hind wings hyaline, with hyaline veins; pterostigma rather reddish in both pairs. Wings short, a little more than twice as broad, rounded at tips, cubitus not curving toward the post-cubitus, the connecting veinlets each way about equal, a connecting veinlet from cubitus to radius before the origin of the first sector; three sectors, upper branch of the third forked, lower simple, five or six gradate veins of inner series, last one basad of the next to last, four or five gradate veinlets in outer series; second post-costal closed.

One specimen, Sherbrooke, Canada, October [L'abbé P. A. Bégin].

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Group III.—Four sectors.

Here belong two described species, *H. longifrons* Walk. and *H. alternatus* Fitch, and a new species below.

Hemerobius fidelis n. sp.—Alar expanse 14 mm. Head and thorax fuscous, antennæ and legs pale; wings broad, broadly rounded at tips, costal space very broad, radius and subcosta farther apart than usual, and connected toward the base by two veinlets: four sectors, the fourth arising beyond the middle of the wing, forked once before the outer series of gradate veinlets, other sectors simple, first connected near base to the radius, cubitus forked at usual place, the lower branch straight not bending toward the post-cubitus, upper branch connected to the first sector, the lower to post-cubitus and continued across to the post-cubital sector, each side of equal length; five gradate veinlets in inner series, last one basad of the next to last; seven or eight gradate veinlets in outer series; second post-costal cell closed. Wings hyaline, veins pale, scarcely dotted, gradate veinlets mostly fuscous, a fuscous band across wing from within pterostigma through gradate veinlets, and mostly fuscous beyond the second series of gradate veinlets; hind wings with an indistinct fuscous band across the middle, and another just beyond the outer gradate veinlets, leaving a narrow, pale, apical margin. Abdomen blackish.

One specimen, Gowanda, N. Y., June 25 [E. P. Van Duzee].

TRICHOPTERA.

Limnephilus ornatus n. sp.—Length 20 mm. Head yellowish, clothed with whitish hair, antennæ and palpi yellowish, with black hair on the former, thorax reddish, with whitish and some black hairs. Abdomen greenish, legs pale yellow, with black spines, black dot on trochanter. Wings hyaline, marked with silvery and fuscous, costal space without marks, a somewhat silvery stripe below the radius, behind this the disc is fuscous to the post-cubitus, a prominent silvery stripe in the thyridial area not reaching the anastomosis, another stripe in the base of the first subapical cell, a long one in fifth, and much shorter ones in bases of third and fourth apical cells, a long silvery stripe behind the post-cubitus, and the basal and anal region with some silvery hairs; basal joints of antennæ about once and a half longer than broad; about nine spines basad of the subapical spurs on the hind tibiæ, other tibiæ thickly spined to base; anastomosis somewhat oblique, first subapical on thyridial three times as far as the first apical on discal cell, veinlet at base of the subapicals oblique, in hind wings the fourth apical cell is plainly narrower at base than the second, in one specimen the third apical is divided.

Two females, one from Sherbrooke, Canada (L'abbé P. A. Bégin); the other from Franconia, N. H. (Mrs. A. T. Slosson). In one specimen there are a few pale spots in tips of the apical cells, and a fuscous dot in the base of the third one.

Anabolia unicolor n. sp.—Length 25 mm. Head and thorax ferruginous, clothed with yellowish hair; antennæ reddish yellow; legs yellowish, with black spines, black dot on the trochanter; wings are uniform luteo-hyaline, clothed with short yellow hair, veins yellow, a faint dark cloud beyond the anastomosis,

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and a dark point in the base of the third apical cell; hind wings paler; palpi slender, basal joint of antennæ once and a half longer than broad; spurs 1, 3, 4. subapical pair on hind tibiæ about half the distance to apical pair; about seven spines basad of subapical spurs on the hind tibiæ, other tibiæ thickly spined to the base, a few at tips of femora. Wings moderately long, not very much rounded at tips, discal cell fully twice the length of its pedicel, third apical cell but slightly indents the anastomosis; first apical cell is longer on the discal than the fifth apical on the thyridial, veinlet at base of second subapical cell is very oblique; apical cells long, about of equal width at base; in the hind wings the fourth apical cell is as broad at base as the second apical cell.

One female, Skokomish River, Washington (Trevor Kincaid).

The species of this genus, four in number, can be separated by the following table:

1. Thorax blackish above.....2.
   Thorax yellowish above.....3.
2. Wings uniform fuscous.....**modesta.**
   Wings mottled.....**bimaculata.**
3. Wings uniform yellowish, no stripe on thorax.....**unicolor.**
   Wings faintly mottled, black stripe on thorax.....**consocia.**

Halesus minutus n. sp.—Length 9 mm. Head and palpi yellowish, with a few whitish hairs; antennæ fuscous, basal joints yellow; thorax honey-yellow. Abdomen dark above, except at base, pale beneath. Legs pale yellow, with black spines, black dot on trochanter. Wings hyaline, pale yellowish toward base, clouded with fuscous on the anastomosis, on veinlet at bases of subapical cells, and along the tips of some of the apical veinlets, a dot in base of third apical cell: veins yellow; basal joints of antennæ quite widely separated, nearly twice as long as broad: spurs 1-3-3 (but one of the apical pair to each hind tibia is wanting so apparently 1-3-2): two spines basad of the subapical spur on hind tibia, other tibiæ sparsely spined to base; wings moderately narrow, veined as in typical *Halesus*, save that the first subapical cell is barely twice so far on the thyridial as the first apical on the discal cell, and the veinlet at the bases of subapical cells is more oblique than usual, the apical cells are all of about equal width.

One specimen, Colorado, sent by Mr. C. F. Baker.

Enoicyla incerta n. sp.—Length 8 mm.; alar expanse 14 mm. Black, tips of the femora, the tibiæ, and bases of the hind tarsi yellowish; wings blackish, black veined, with black bristles on the veins, surface sparsely clothed with black hair, a faint hyaline spot at the arculus; hind wings are grayisb with a blackish fringe. Legs with small black spines; spurs 1-2-2, discal cell nearly as long as the pedicel, closed obliquely beyond the anastomosis; first apical cell acute at base, fifth not reaching the anastomosis, the others nearly equal at base: radius curved at the pterostigma; subcosta ends in a cross-vein in front of the pterostigma: in the hind wings the first apical is long pedicellate, and the fifth does not reach the anastomosis.

One from Sherbrooke, Canada, May (Bégin); one from Franconia, N. H. (Slosson), and several from Sea Cliff, N. Y., April.

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Silo pallidus n. sp.—Length 8 mm. Yellowish, clothed with pale yellow hairs; head somewhat more reddish; veins of the wings pale; legs and spurs pale yellow: antennæ with basal joint much longer than the head, slender, not very densely clothed with hairs of moderate length, longer yellow hair above on head; wings long and slender, pointed at tip, posterior pair but little shorter than anterior pair; both branches of the radial sector forked, the upper branch of cubitus forked, all in the same region of wing; discoidal cell in fore wings several times longer than broad, closed; thyridial area closed; cubitus connected to post-cubitus before middle and toward tip, in both cases the veinlet continues across to the next vein; spurs 2-4-4.

Several specimens from Ithaca, N. Y.; plainly distinct from *S. griseus*, which has dark spurs and hind legs.

OLEMIRA n. gen.

A Sericostomatid; spurs 2–4–4; basal joint of antennæ much longer than head; discal cell in both wings closed; palpi of ♂ appressed to head; in ♂ the costal region of the fore wing is much broadened and reflexed upon the upper surface of the wing.

Olemira americana n. sp.—Length 9 mm. Black, legs yellowish, anterior pairs darker toward the tips; basal joint of antennæ blue-black, with black hair, beyond yellowish; palpi black, in ♂ forming a beak between the antennæ and clothed with blue-black hair; wings gray, anterior pair clothed with yellowish pile, veins dark, long black fringe on basal half of hind pair; fore wings little more than three times as long as broad, rounded at tip, hind pair not broader than fore ones, broadest beyond the middle, also rounded at tip; in ♂ the costal region of fore wings is reflexed on the upper surface of wing, reaching to near the middle, its under surface (which appears above) is naked; both branches of radial sector forked in the fore wings, only upper in hind wing; discal cell in fore wings many times longer than broad, narrowed at tip, shorter in hind wings; apex of ♂ abdomen with a short horn, and before it a bilobed median carina.

One male, several females, Sea Cliff, N. Y., July.

Mormonia vernalis n. sp.—Length 10 mm. Head pale below antennæ and clothed with black hair, above dark and with yellowish hair; palpi with black hair above, pale beneath, in ♂ more yellow hair on head and palpi: basal joints of antennæ pale, with white appressed hair and longer black, rest of antennæ fuscous, annulate with pale; thorax black, with yellow and some black hair. Legs pale, darker on outside of basal joints. Abdomen dark, in ♀ ventral segments margined with pale, in ♂ whole venter pale. Wings gray, clothed with yellow and longer black hair, a larger whitish spot near middle of posterior margin, variable in extent, basad of the spot the wing is often darker than elsewhere, fringe whitish at this point, beyond black: hind wings gray, long fringe at base gray, darker beyond; basal joint of antennæ scarcely longer than head, plainly shorter than in *M. togata*; spurs 2–4–4: wings rather slender, hind pair not broader than fore pair, discal cell closed in both, in fore wings it is about one half as long as the pedicel: the subcostal vein is very wavy; the last dorsal

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segments of the ♂ abdomen bear a dense brush of hair, dark in middle, pale at ends.

Sea Cliff, N. Y.; common near streams, March, April and May.

Heteroplectron (?) dissimilis n. sp.—Length 10.5 mm.; alar expanse 19 mm. Dull black, palpi paler, hairy, last joint slender, rather longer than the next to last; antennæ pale, basal joint fuscous, longer than diameter of eye, scarcely annulate beyond, longer than the wings; legs yellowish, spurs 2-4-4; abdomen black, segments margined with white, especially the last ventral. Wings blackish, sparsely clothed with black and yellow hairs, fringe black; venation much as in *H. borealis*, but the upper fork of the upper branch of radial sector is angulate and connected to radius, beyond the angle it is concave (in *H. borealis* it is straight), this makes the first apical cell wider in the middle; the lower branch of radial sector is forked, but much nearer to tip; at about region of anastomosis the veins are faint, and somewhat coalesce as in *H. borealis;* at this point there is a hyaline spot; behind there are two transverse veinlets as in that species; hind wings rather broad, blackish, with black fringe.

Several specimens, Sea Cliff, N. Y., June and July. This is hardly a true *Heteroplectron*, yet congeneric with what I take to be Provancher's *H. borealis*. The general arrangement of the venation is like that of *Heteroplectron*, but the anterior cross-veins are rather indistinct, besides the spurs are 2–4–4 in what seems to be a male, and there is no fringe on hind tibia.

Polycentropus signatus n. sp.—Length 8 mm.; alar expanse 15 mm. Head and thorax with long yellowish white hair, blackish behind the eyes; antennæ yellowish, annulate with fuscous; palpi pale, dark at tip; abdomen dark above, pale below; legs yellowish; wings with pale veins, mostly clothed with black hair, some pale hair on veins toward the base, a large yellowish white spot on the disc, connected behind to one at the arculus, a third over the region of anastomosis, black on costa; hind wings gray, also black on costa; both branches of the radial sector are forked, the lower at connecting veinlet, the upper rather to this veinlet than to margin: both branches of cubitus forked, the lower one much the nearer to the base; spurs 3-4-4; the inferior pieces of the ♂ genitalia are quite long, swollen above near the base, and then concave to the tip.

One male, Buffalo, N. Y., August (E. P. Van Duzee).

Polycentropus affinis n. sp.—Length 6 mm.; alar expanse 11 mm. Head and thorax with long yellowish hair, fuscous behind the eyes and on sides of thorax; antennæ luteous, barely annulate with fuscous; palpi pale; legs luteous, with whitish hair; wings grayish, with scattered yellow hair, a white spot at the forking of the cubitus, with a downward projection, another white spot on the veinlet connecting branches of cubitus and radial sector, upper branch of radial sector not forked.

Two specimens, one Ontario, Canada; the other Buffalo, N. Y. (E. P. Van Duzee). Very close to *P. lucidus*, but latter has upper branch of radial sector forked, and hyaline spots differently arranged.

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Polycentropus canadensis n. sp.—Length 6 mm.; alar expanse 11 mm. Head and thorax with long white hair, patches of black above eyes and just before bases of wings: antennæ pale, annulate with brown. Legs yellowish, faintly marked on the tarsi. Wings blackish, thickly spotted with white, rather larger at posterior base and at cubitus; hind wings uniform gray, with a white fringe behind; both branches of radial sector forked, the upper one much beyond, and the lower just before the cross-vein; both branches of cubitus forked, the lower nearer the base; spurs 3-4-4.

Two specimens, Sherbrooke, Canada, July (L'abbé P. A. Bégin). Recognized by its small size and mottled wings.

Bersea nigritta n. sp.—Length 4 mm. Head black, shining, broad, with a rather rounded ridge from eye to eye, a small pitted tubercle each side above, and two pale tubercles below the ridge near the middle; basal joint of antennæ black, rest pale; palpi pale, with black hair; legs pale, mostly with white hair, but some black, a few black spines on tarsi, hind tibia very much longer than femur, spurs 2-2-4; thorax and abdomen black. Wings blackish, with pale veins and black hairs, veins indistinct, no cross-veins seen, lower branch of radial sector and lower branch of cubitus forked. Abdomen with a sharp slender spur below before tip.

Two specimens, Sea Cliff, N. Y., June.

Glossosoma americana n. sp.—Length 9 mm.; alar expanse 16 mm. Pale, head yellowish, darker above, with luteous hair; antennæ yellow, apical half fuscous; palpi pale brownish; thorax pale, with luteous hair; legs pale yellowish, spurs blackish, coxæ fuscous. Abdomen light brown. Wings hyaline, sparsely clothed with luteous and gray hair, some near tips of fore wings and the fringe darker gray, veins luteous, a white mark at end of thyridial area, a spot on forking of cubitus, and another at arculus; antennæ shorter than the body, slender; basal joint a little enlarged; third and fifth joints of palpi subequal, fourth a trifle shorter. Legs moderate, hind tibiæ quite slender and curved, tibia and first tarsal joint enlarged in second legs of ♀; spurs 2-4-4, the upper pair on hind legs about their length before the apical pair, above them are three small yellow spines; wings moderately broad, rounded at tip, discal cell in both pairs closed, radius above the middle of discal cell in fore wings suddenly, but slightly bent, an oblique cross-vein connecting the cell and the radius, fifth apical cell almost reaching the anastomosis; near the tip of the ante-penultimate ventral segment of the ♀ is a distinct conical tooth.

One female, Franconia, N. H. (Mrs. A. T. Slosson).

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ON THE SPECIES OF BEMBIDIUM OF AMERICA NORTH OF MEXICO.

BY ROLAND HAYWARD.

The present paper is the result of a study, extending somewhat over three years, of the species of *Bembidium* occurring in the United States and Canada. This is one of the few remaining genera of the family Carabidæ which has not been revised in recent years, the latest work upon the subject being a division of the genus into groups by the late Dr. LeConte (Proc. Acad. Phil., 1857, p. 3). Seventy-five species are enumerated in that paper as known to him, of which sixty-five are here regarded as good species. Since that time a large number have been discovered, others then unrecognized have been identified, and there are many in collections which are here described for the first time, so that the number which I have been able to verify is one hundred and twenty-four, while there are about a dozen described from North America by Mannerheim, Motschulsky and Chaudoir which remain unknown to me.

It has, therefore, been impossible for the collector to identify his species without reference to the larger typical collections, especially as the descriptions are so scattered as to be practically inaccessible to the majority of students, while many of them are so meagre as to afford almost no assistance. I have here attempted to clear up some of this confusion.

The genus *Bembidium*, as at present constituted, contains a very large number of species, which present a considerable diversity of form. Many of these differences, particularly in the form and structure of the mouth-parts, are such as would be regarded as generic in other parts of the family. As a natural consequence, numerous efforts have been made, especially by the older writers, to subdivide the genus generically, so that, as a result, a number of groups have at various times been raised to the rank of genera. Many of these were based upon entirely superficial characters, some of them of absolutely no value even for the definition of groups, while the characters of nearly all of these so-called genera have gradually become evanescent with the discovery of new and intermediate forms, so that one by one they have been re-united with *Bembidium*. For an

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excellent summary of these earlier attempts at the subdivision of the genus the student is referred to Duval's "De Bembidiis Europæis" (Ann. Soc. Ent. France, 1851, sér. 2, ix, pp. 455–461). Duval, himself, has gone to the other extreme, including in *Bembidium* both *Tachypus* and *Tachys*.

In one of his earlier papers (Ann. Lyc. N. Y., 1848, iv, p. 451) Dr. LeConte has subdivided the North American species of the genus into four genera, which later, however, he has suppressed, referring all our species to *Bembidium*. The genera above referred to are: *Bembidium*, including *punctatostriatum*, *carinula*, *littorale* and *inæquale*—*Odontium*, containing *coxendix* and *confusum*—*Hydrium*, erected for the reception of *lævigatum*—*Ochthedromus*, including all our other species.

The last genus to follow in the footsteps of the others was *Amerizus* Chaud., which was based upon the peculiar structure of the maxillæ, the outer lobe of which is composed of but a single piece, resembling in this respect *Callistus*.* The fusion of the two joints, however, is by no means as complete as in the latter genus, the suture between them being visible on the under side. *Amerizus* was founded on our *B. spectabile*, and one other species, *B. oblongulum*, should be referred to it, as pointed out by Dr Horn (Trans. Am. Ent. Soc., ix, 1881–82, p. 134), were the genus allowed to stand. It has, however, been united with *Bembidium* by that author (loc. cit.), and it seems to me better to pursue this course, at any rate for the present, and to regard the two species composing it as aberrant members of the latter genus.

As may be inferred from what has been already said, no attempt at generic subdivision has been made in this paper, first on account of the poor success that has attended similar efforts by writers more experienced than myself in systematic work, and secondly because I am familiar with only our North American species. It would undoubtedly be a great convenience were some good, constant characters discovered for the division of the genus into two or more genera. In order, however, for one to attempt this, if indeed it be possible to do it at all, and to have the results of his work really of service, it seems to me that he must be familiar with the species from all parts of the world where the genus occurs, and not only with those from one region. *Bembidium*, therefore, as treated in this work, is the

* For figures of the mouth-parts of *Amerizus* and several *Bembidia* see Horn. Trans. Am. Ent. Soc., ix, pl. vi, figs. 36–38.

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same as defined by LeConte and Horn in the "Classification of the Coleoptera of North America." No detailed description of the genus has therefore been given, as it is sufficiently well defined in the work just referred to, which is easily accessible to all.

In separating our species into groups I have followed very closely the system proposed by Dr. LeConte in 1857, in the paper above cited, with such modifications as seemed necessary on account of the larger number of species now known. I have also carefully studied Duval's work, previously referred to, on the European species of the genus, but have found his method of grouping entirely inapplicable to those of our fauna.

The only character known to me for the separation of the sexes is to be found in the anterior tarsi, the first two joints of which are dilated in the males, the first being slightly elongate and nearly quadrate, the second more or less triangular with the inner angle usually slightly prolonged.

I am entirely unacquainted with the early stages of any of our North American species. The larvæ of several European ones have, however, been described,* and it is natural to infer that those of our species are not very different.

As regards distribution, *Bembidium* is much more largely represented in boreal or temperate countries or in mountainous regions. Very few species extend into the Southern States. Quite a number, however, occur in Mexico and the Peninsula of California, some of which are found also in the United States, especially in Arizona and California. Several species are also common to North America and the old world, and it is highly probable that the number of such will be materially increased when more collecting shall have been done in the more Northern portions of this continent. It is also not unlikely that some of those now regarded as distinct may be found to be identical with European or Asiatic species when more comparative work shall have been done between those of the two continents.

* Descriptions of the larvæ of the following species have been published:—*B. bipunctatum* Linn. (Schioedte, Nat. Tedsschr., 1867, 4, pp. 518–521, tab. 20, figs. 17–22).—*B. pallidipenne* Ill. (Schioedte, ibid. p. 521, tab. 20, fig. 23).—*B. nanum* Gyll. (Perris, Hist. pin. Mar. (1862), 1863. i, pp. 459–461, figs. 510 516.—Bericht, 1862. 75).—*B. laterale* Curtis (Fairmaire, Ann. Soc. Ent. Fr., 1852, ii. 10, p. 673, tab. 11, No. 4, fig. 2.—Bericht, 1852. p. 53).—? *B. lunatum* Duft. (Schaum, Berlin Ent. Zeitschr., 1859, 3, pp. 38 39, tab. 4, fig. 2; also Nat. Ins. Deutschl. 1860, i. pp. 666-667.- Perris, Hist. pin. Mar. (1862), 1863, i, p. 462). The pupa of *B. nanum* Gyll. is also described and figured (loc. cit.).

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Looking at *Bembidium* from the standpoint of an evolutionist, I have been led to believe that it is decidedly a modern gĕnus, or at least one that has undergone much modification during geologically recent times. The fact that so many futile attempts have been made at its subdivision points, I think, to this conclusion. There is indeed a certain lack of fixity in many characters which indicates strongly the recent nature of their development. As regards the distribution of the species, although many extend over an immense amount of territory, we find that some groups, and usually such as possess some peculiar or anomalous character, are confined to cer.ain regions, as for instance that containing *scudderi*, *henshawi*, etc. The above remarks seem to be applicable to the Bembidiini as a whole. From the other Carabidæ this tribe is distinguishable by its subulate palpi, a character in itself peculiar, while the genera are separable by rather feeble characters, some as for instance *Tachypus* and *Pericompsus*, by such as are usually used rather for the separation of groups of species than of genera. With regard to the palæontological history of the genus, Mr. S. H. Scudder informs me that it is unknown earlier than the tertiary period,* when the insect fauna was nearly the same as that of the present day. But I have neither time nor space to discuss this subject further. I merely wish to call attention to an interesting subject for investigation.

The preparation of this paper has taken a very large amount of time, and I have had many difficulties to contend with. Should it prove of use to the student of our fauna, however, and assist in clearing up the confusion which exists with regard to this genus, I shall feel amply repaid for all my work. As will be observed, I have not attempted to identify all of the species that have been described from North America, as the types of those that remain unidentified are probably in European collections. Synoptic tables and descriptions have been prepared of the species known to me in nature, and the original descriptions of those that remain unrecognized are reprinted in the appendix, in order to assist those who have not ac-

* I learn from Mr. Scudder that seventeen fossil species have been found. Of these five existing species have been recorded from the Pleistocene of Gallicia, Bavaria and France, and five more extinct one from Ohio, Canada, France and Gallicia. Seven species are known from the older tertiaries (including two unpublished species from Florissant, Col.). These are from Radoboj, Aix, amber and Colorado (Florissant). The genus has also been recognized in Alsatia and at Oeningen, in Baden.

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cess to the works in which they were published, some of which are now quite rare.

Before closing these introductory remarks I would remind those who use this paper that too much reliance must not be placed upon the synoptic tables for the identification of specimens, but that reference must also be made to the descriptions.

Finally, before passing to the body of the work, I wish to express my sincere thanks to the many friends and correspondents to whom I am indebted for assistance in various ways. The kind and bounteous contributions of many of them have greatly increased the amount of material which I have had for study, while the aid afforded me in other ways by several has very much lightened my work and has added to whatever value this paper may possess.

To Dr. George H. Horn I am under great obligations for the loan of his entire material, as well as for many additions to my cabinet, and for much valuable assistance and advice.

Mr. Samuel Henshaw has aided me greatly in the preparation of the bibliography and synonymy, and my gratitude is also due him for an opportunity to use almost *ad libitum* the LeConte collection, now in the Museum of Comparative Zoölogy at Cambridge; a privilege which has been of very great value, as it would have been almost impossible to have prepared this paper without studying LeConte's types. His kind assistance in other ways has also been of service.

I would also acknowledge my indebtedness to Mr. F. C. Bowditch, of Brookline, Mass., who has placed his entire material at my disposal for several years.

To Mr. Henry Ulke, of Washington, I am grateful for the privilege of studying the only known specimens of *Bembidium morulum* Lec. which are in his collection.

I am under obligations to Mr. S. H. Scudder for information on the fossil species of the genus, and to Mr. G. C. Champion, of London, for assistance in comparative work.

My thanks are also due to Mr. H. F. Wickham, of Iowa City; Mr. L. E. Ricksecker, of Occidental, Cal.; Mr. H. C. Fall, of Pomona, Cal.; Mr. Frederick Blanchard, of Lowell, Mass.; Mr. W. H. Harrington, of Ottawa, Canada; Mr. Chas. Liebeck, of Philadelphia; Mr. H. E. Weed, of Starkville, Miss.; Mr. Wm. Beutenmüller, of New York; and Mr. W. R. Reinicke, of Philadelphia, for the loan of much material, as well as for many additions to my cabinet, or for assistance in other ways.

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As compared with other Carabidæ, the species of *Bembidium* are decidedly below the average size, the length varying, roughly speaking, from slightly less than one-tenth to about seven-twentieths of an inch, or from two to nine millimeters. Most of them are riparial in their habits, occurring under stones and refuse near the water's edge along streams, the shores of ponds, or on the sea-shore. Some are found under bark, amongst old leaves, or in moss, while a few occur almost everywhere.

With regard to the characters which have been made use of in grouping the species, but little need be said.

The eyes are usually large or moderately large and prominent. In a few species, *B. oblongulum*, *B. laticeps* and their allies, they are small and flattened, a character which enables us to isolate them from other *Bembidia*.

The grooves on the front between the eyes, whether single or double, and whether parallel or convergent, are of use in the separation of groups.

The mouth-parts, although affording us the means of defining the tribe Bembidiini, have otherwise yielded but few characters. They vary to a great extent within the limits of the genus, but the differences, as a rule, become evanescent. The outer lobe of the maxillæ, whether biarticulate or not, and the form of the mentum tooth have, however, been of service.

The surface of the head, whether alutaceous or smooth, is of value only in the separation of species, and even then must be used with care.

The thorax, whether pedunculate or not, as well as by its form and the foveate impressions at the base, whether uni- or bistriate, has afforded several useful characters.

The position of the dorsal punctures, whether situated on the third stria of the elytra or on the third interval, is of very great importance, while their number is also of use in the definition of groups. In nearly all our species they are confined either to the third interval or to the third stria. In *B. lævigatum* and *B. semistriatum*, however, each representing a separate group, there are irregular rows of small setigerous punctures on all the intervals. In the table of groups which follows these are placed, together with those in which the punctures are confined to the third interspace, in the category: "third interval with dorsal punctures," in contra-distinction from those in which they are situated on the third stria.

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The form of the elytral humeri, whether subangulate or rounded, is a character of considerable importance.

The elytral striæ, whether entire or effaced at tip or nearly obsolete, have been of service, when properly subordinated to other characters. The eighth stria (counting the sutural as the first), whether or not distinct from the margin, has also been of use in the definition of groups.

The species themselves are often quite difficult to define, especially in groups v, vii, ix, xii and xvii. Moderately large series of all but our rarest species, amounting in some instances to several hundred specimens, have been studied. No new species have been described from uniques, although there are several in my own and other collections which cannot be satisfactorily placed. Less harm I believe will be done, however, by postponing the description of a few doubtful species than by increasing our already too large list of synonyms. In reference to this subject I cannot do better than to quote the following passage from Dr. Horn's recent paper on *Heterocerus**: "The more specimens examined the greater the difficulty in defining the species and the greater the necessity for the use of judgment in placing specimens." This is equally applicable to *Bembidium*.

With these preliminary remarks we may divide the genus into the following groups:

Eyes small, flattened .....11.
Eyes large, or moderately large, convex .....2.
2. Elytra with the humeri subangulate, third interval with dorsal punctures, eighth stria distinct from the margin .....3.
Elytra with the dorsal punctures on the third stria .....4.
Elytra with the humeri rounded, third interval with dorsal punctures ....6.
3. Mentum with a short, bifid tooth; striæ of elytra more or less abbreviated behind.
Elytral intervals with irregular rows of sparsely placed setigerous punctures.....Group i. **lævigatum.**
Elytra with two dorsal punctures on the third interval; Group ii. **nitidum.**
Mentum with a large, entire tooth: striæ of elytra entire.
Elytra with two impressed quadrate foveæ on the third interval, each enclosing a dorsal puncture .....Group iii. **littorale.**
Elytra without trace of foveæ; dorsal punctures two. Group iv. **coxendix.**
4. Eighth stria of elytra indistinct from the margin, humeri rounded.....5.
Eighth stria of the elytra moderately near, but distinct from the margin, dorsal punctures two.
Humeri of elytra subangulate, the striæ entire.....Group v. **honestum.**
Humeri of elytra rounded.....Group vi. **concolor.**

* Trans. Am. Ent. Soc. xvii. p. 16.

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5. Elytra with two dorsal punctures.
   Thorax trapezoidal, scarcely convex, the basal foveæ distinctly bistriate, the outer stria as long or longer than the inner; legs dark. Group vii. **planatum.**
   Thorax trapezoidal, scarcely convex, the basal foveæ unistriate or feebly bistriate with the outer stria very small; legs rufous or testaceous, the femora rarely darker. Group viii. **transversale.**
   Thorax subcordate or cordate, convex, basal foveæ bistriate. Group ix. **ustulatum.**
   Elytra with three dorsal punctures. Group x. **rickseckeri.**
6. Humeral line not hamate. 7.
   Humeral line hamate uniting with the fifth stria, which is entire; frontal striæ normal. Group xix. **iridescens.**
7. Elytra with two dorsal punctures. 8.
   Elytra with three dorsal punctures, all the striæ entire; frontal striæ normal. Group xi. **scudderi.**
   Elytral intervals with irregular rows of small, sparsely placed setigerous punctures, all the striæ abbreviated behind; frontal striæ normal. Group xviii. **semistriatum.**
8. Frontal striæ normal. 9.
   Frontal striæ double, often convergent. 10.
9. Elytra distinctly striate with at least the first and second striæ entire; head often alutaceous. Group xii. **variegatum.**
   Elytra obsoletely striate, all the striæ abbreviated behind. Group xiii. **bifasciatum.**
10. Frontal striæ double, nearly straight, the outer stria entire. Group xvi. **sulcatum.**
    Frontal striæ double, oblique, the outer stria interrupted.
    Thorax cordate, pedunculate or subpedunculate. Group xiv. **quadrimaculatum.**
    Thorax cordate or subcordate, truncate at base. Group xv. **affine.**
    Frontal striæ very oblique, strongly convergent, double, the outer shorter than the inner and less deep, often feeble; thorax cordate, truncate at base. Group xvii. **assimile.**
11. Maxillæ with the outer lobe bi-articulate; elytra with two dorsal punctures on the third stria. Group xx. **laticeps.**
    Maxillæ with the outer lobe with the two joints united; mandibles long, slender, nearly straight; elytra with two dorsal punctures on the third interval. Group xxi. **oblongulum.**

Group i. lævigatum.

Maxillæ with the outer lobe bi-articulate; mentum with a short bifid tooth; frontal striæ single, straight, parallel; eyes moderately large, prominent. Prothorax truncate at base, scarcely obliquely so each side. Elytra with the humeri subangulate; striæ abbreviated behind, rather feebly impressed with large, deep punctures; eighth stria distinct from the margin; intervals with irregular rows of setigerous punctures.

This group includes but one species.

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1. **B. lævigatum** Say.—Form robust, convex; color dark green or bronze, very shining. Head slightly narrower than the thorax at apex; palpi testaceous; antennæ about one-half as long as the body, fuscous, the basal joints testaceous. Prothorax subquadrate, slightly wider at base than apex, more than one-half wider than long, with a few sparsely placed punctures at base; apex feebly emarginate; median line fine, entire or abbreviated in front; transverse impressions moderately distinct; basal impressions broad, deep, bistriate, the outer stria small; sides with the margin distinctly reflexed, arcuate in front, at most obsoletely sinuate in front of the hind angles, which are subrectangular and carinate. Elytra less than one-half wider than the thorax, oblong-oval; intervals feebly convex. Beneath nearly black, shining. Legs rufo-testaceous, the femora often slightly darker. Length .22–.29 inch; 5.5–7.25 mm.

An aberrant species, very distinct from the others of the genus. In fact, LeConte erected the genus *Hydrium* for its reception (Ann. Lyc., 1848, iv, p. 453), but later reunited it with *Bembidium*, from which it does not seem sufficiently distinct for generic separation. It has usually been placed near the end of the genus near *B. semistriatum*, with which it has little in common, however, except the arrangement of the dorsal punctures and the abbreviated elytral striæ. On the other hand it is allied to *B. nitidum* by the bifid mentum tooth and the subangulate elytral humeri. I have accordingly placed it at the head of the genus. It is subject to but slight variation. In well preserved specimens the setæ, arising from the rows of punctures on the elytral intervals are very distinct.

It is widely distributed, occurring locally from New Hampshire to Montana and Texas, specimens having been seen from the three States mentioned and from Pennsylvania, South Carolina, Illinois, Iowa, Missouri and Kansas.

Group ii. nitidum.

Maxillæ with the outer lobe bi articulate; mentum with a short bifid tooth; frontal grooves single, parallel; eyes moderately large and prominent. Thorax truncate at base, scarcely obliquely so each side. Elytra with the outer striæ abbreviated behind, the eighth distinct from the margin; humeri subangulate; third interval with two dorsal punctures.

This group seems in some respects intermediate between the last and the next two. The bifid mentum tooth and abbreviated outer striæ of the elytra ally it to the former, while to the *littorale* and *coxendix* groups it is related by the number and position of the dorsal punctures. With all three it agrees in having the humeri of the elytra subangulate.

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But two species are known to me. As here defined *B. nitidum* includes both *aptum* and *obliquulum*, the last named having hitherto been retained as distinct. In a large series of specimens, however, the characters on which it was based become evanescent. Our species may be separated by the following characters:

Thorax distinctly wider at base than at apex; elytra very slightly wider than the thorax, distinctly striate; color usually bronzed. Length .18–.28 inch.
nitidum Kirby.

Thorax as wide at base as apex; elytra about one-half wider than the thorax, the two or three inner striæ distinct but very fine, the others almost or entirely effaced; color black, scarcely æneous. Length .14–.20 inch.
erasum Lec.

2. **B. nitidum** Kirby.—Form robust, slightly convex; color nigro-æneous or æneous, very shining. Head rather small, slightly narrower than the thorax at apex; palpi black; antennæ about one-half the length of the body, black, more or less rufous at base. Prothorax subquadrate, about one-half wider than long, very distinctly wider at base than apex; apex slightly emarginate; median line very fine, extending between the transverse impressions, the anterior of which is rather feeble, the posterior moderately distinct; basal impressions broad, bistriate, the inner stria larger and deeper than the outer; sides with the margin very narrowly reflexed, arcuate, feebly sinuate in front of the hind angles, which are rectangular and finely carinate. Elytra oblong-elliptical, slightly wider than the thorax, finely striate: striæ punctate, the first and sometimes the second entire, the fifth represented by a slight groove at tip, the others abbreviated behind; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, often slightly tinged with green, shining. Legs black, or dark piceous, often slightly æneous, the tibiæ and tarsi sometimes rufo-piceous. Length .18–.28 inch.; 4.5–7 mm.

A very well-marked species, easily recognizable from *erasum* by the characters given in the table. It varies greatly in size and the color of the legs is variable as indicated above. In the typical *nitidum* the legs are black, and only the basal joint of the antennæ is rufous, this color in some specimens being confined to the under side, while the basal impressions of the thorax have the striæ parallel. Most specimens from the Pacific coast differ from more Eastern examples in having the three basal joints of the antennæ rufous, the legs piceous, with the tibiæ and tarsi rufo-piceous, and the inner basal fovea slightly oblique. This is the *obliquulum* of LeConte. The two forms, however, intergrade.

It occurs in Canada and throughout the more Northern portions of the country from the Atlantic to the Pacific, extending along the Pacific coast from Alaska to California.

3. **B. erasum** Lec.—Form moderately robust; color black, scarcely æneous, shining. Head scarcely narrower than the thorax at apex; palpi black; antennæ

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about one-half as long as the body. black. Prothorax rather more than one-half wider than long, as wide at base as apex, finely and sparsely punctulate at base; apex feebly emarginate; median line either entire or abbreviated in front; transverse impressions moderately distinct, the anterior sometimes rather feeble; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, scarcely sinuate behind; hind angles subrectangular, strongly carinate. Elytra about one-half wider than the thorax, with the two or three inner striæ very fine, the others almost or entirely effaced; striæ very finely or obsoletely punctulate, the first only entire; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs black, the tibiæ and tarsi sometimes piceous. Length .14-.20 inch.; 3.5-5 mm.

Distinct from the preceding by the thorax not wider at base than apex, with the basal impressions deeper and the hind angles more strongly carinate. The elytra are proportionally wider as compared with the thorax, much more finely striate, with all but the two or three inner striæ effaced.

It occurs along the Pacific coast from Vancouver Island to California, extending as far East as Nevada.

Group iii. littorale.

Maxillæ with the outer lobe distinctly bi-articulate; mentum deeply emarginate, with a large, entire tooth; frontal striæ single, deep, parallel; eyes large and prominent. Prothorax subquadrate, as wide or wider at base than apex, truncate at base, obliquely so each side. Elytra with the third interval wider than the others and with two impressed quadrate foveæ, each enclosing a dorsal puncture; striæ entire, the eighth distant from the margin; humeri subangulate. The quadrate foveæ on the third interval are peculiar to this group, and give an easy means of distinguishing the species belonging to it from those of allied groups.

This is one of the best defined groups of the genus. The species are rather above the average size, generally more or less bronzed without testaceous markings, and usually with the surface of the elytra uneven, alutaceo-granulate, with elevated smooth spaces, this latter character being less marked in *punctatostriatum*. It is the equivalent of the first section of Duval's second group (Ann. Soc. Ent. France, 1851, ser. 2, ix, p. 452), that author including in his second section those which I have placed in the next group.

Five species are known to me. One, *B. littorale* Oliv., occurs also in the old world. They may thus be separated:

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Elytra with the fourth stria sinuate.

Form slender, elongate, convex; thorax as long as wide, not wider at base than apex, hind angles subacute; elytra deeply striate, the striæ distinctly punctate; legs æneous, the femora at base and the tibiæ more or less testaceous. Length .19–.22 inch.....**inæquale** Say.

Broader, less convex; thorax distinctly wider than long, slightly wider at base than apex, hind angles varying from subrectangular to subacute; elytra less deeply striate, the striæ more finely punctate; legs variable, usually nearly as in *inæquale*. Length .19–.26 inch.....**littorale** Oliv.

Elytra with the fourth stria straight.

Thorax not wider at base than apex.

Broad, slightly depressed; thorax nearly twice as wide as long, sides arcuate in front, deeply sinuate behind, basal foveæ bistriate, hind angles subacute, carinate; elytra finely striate, the striæ finely punctate; legs varying from æneo-piceous to æneo-testaceous. Length .22–.28 inch. **cariuula** Chaud.

Thorax wider at base than apex.

Broad, feebly convex; thorax about one-half wider than long, sides slightly arcuate in front, feebly sinuate behind, basal foveæ unistriate, hind angles subacute, not carinate; elytra finely striate, the striæ finely punctate; legs dark æneous or nearly black. Length .22–.28 inch. **lorquini** Chaud.

Robust, moderately convex; thorax very distinctly wider at base than apex, about one-half wider than long, sides slightly arcuate in front, sinuate behind, hind angles prominent, acute; elytra deeply striate, the striæ deeply punctate; legs dark æneous, the femora at base and the tibiæ more or less rufous. Length .22–.30 inch..**punctatostriatum** Say.

4. **B. inæquale** Say.—Form slender, elongate, convex; color bronze, shining. Head large, as wide as the thorax at apex, alutaceo-granulate; palpi piceous, more or less testaceous at base; antennæ more than one-half the length of the body, æneo-piceous, the first joint more or less rufous. Prothorax as long as wide, not wider at base than apex, alutaceo-granulate, finely so or not at all on the disc, feebly rugose at base, slightly transversely wrinkled along the median line; apex nearly truncate; median line deep, sub-entire or slightly abbreviated at each end; transverse impressions distinct; basal impressions broad, unistriate; sides with the margin very narrowly reflexed, arcuate in front, slightly sinuate in front of the hind angles, which are subacute, not carinate. Elytra more than one-half wider than the thorax, oblong-oval, moderately deeply striate, granulate, with slightly elevated smooth spaces; striæ distinctly punctate, the punctures becoming nearly obsolete at apex; fourth stria sinuate, as are also the third, fifth and sixth to a less degree; intervals convex, the third with the first fovea slightly in front of the middle, the second about one-fourth from apex. Beneath dark viridi-æneous, shining. Legs æneous, the femora at base and the tibiæ more or less testaceous. Length .19–.22 inch; 4.75–5.5 mm.

The smallest and most slender species of the group. It is less variable than some of the other species, the color being usually bronze, often slightly tinged with green.

It is most nearly related to *littorale*, from which, however, it is

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readily distinguishable by its more convex and slender form, usually smaller size and proportionally longer thorax, which is not wider at base than apex. The elytra are more deeply striate, with the punctures of the striæ deeper and more distinct. From the other species of the group it may at once be recognized by the sinuate fourth stria of the elytra, as well as by its size and form.

It is widely distributed throughout the Eastern and Central States, being known to me from New Hampshire, Massachusetts (Springfield), New York (Adirondack Mountains; Buffalo), Ohio, Pennsylvania, southwestern Virginia, Georgia, Florida, Wisconsin, Iowa, Arkansas and Texas. LeConte (Ann. Lyc., 1848, iv, p. 452) records it from the Rocky Mountains. I have never known of its occurrence on the Pacific coast.

5. **B. littorale** Oliv.—Form moderately broad, feebly convex; color usually more or less coppery bronze, more rarely greenish bronze or nearly black. Head scarcely as wide as the thorax at apex, alutaceo-granulate; palpi æneo-piceous; antennæ about one-half as long as the body, piceous, the basal joints more or less æneous, the first rarely paler. Prothorax distinctly wider than long, slightly wider at base than apex, alutaceo-granulate, less distinctly so or not at all on the disc, slightly rugose at base, more or less transversely wrinkled along the median line; apex scarcely emarginate; median line distinct, usually abbreviated before and behind; transverse impressions distinct; basal impressions moderately deep, unistriate; sides with the margin very narrowly reflexed, slightly arcuate in front, more or less sinuate behind; hind angles subrectangular, not carinate, or with faint traces of a carina. Elytra rather less than one-half wider than the thorax, nearly as in *inæquale*, with the striæ less deep and less strongly punctate, and the elevated smooth spaces more marked and usually more numerous. Beneath æneous, shining. Legs æneo-piceous, the femora at base and sometimes the tibiæ more or less testaceous. Length .19–.26 inch; 4.75–6.5 mm.

A very variable species. Although usually more or less bronzed, I have seen specimens nearly black, this color being usually correlated with somewhat paler legs. The first joint of the antennæ varies from æneous to nearly rufous. The fourth stria of the elytra is usually very distinctly sinuate, being sometimes nearly united with the third at about one-fourth from base. Rarely, however, it is but slightly sinuate. The third, fifth and sixth striæ are also usually sinuate, though to a less degree. The number and extent of the elevated smooth spaces of the elytra vary considerably, they being either connected or distinct, in some specimens limited to the four inner intervals, in others extending on to the fifth and sixth and even the seventh and eighth, especially towards the tip. The quadrate foveæ are very well marked. The relative width of the thorax as compared with its length varies slightly, as does also its width at

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base as compared with that apex. In some examples that I have seen, especially from the Pacific coast, the hind angles have a very short, feeble carina. It is, however, by no means constant in specimens from that region and gradually fades away, until in a large series all traces of it vanish. The depth of the sinuation of the sides of the thorax behind is also somewhat variable, and the hind angles vary from nearly rectangular to subacute, the latter variation being usually correlated with the depth of the sinuation.

B. lacustre Lec. (Ann. Lyc., 1848, iv, p. 451) cannot be regarded as distinct, it only differing in having the thorax slightly longer and more deeply sinuate behind, and the elevated smooth spaces of the elytra somewhat less extended than in average specimens.

From our other species of the group, except *inæquale*, it differs by the sinuate fourth stria of the elytra. From *inæquale* it may be distinguished by its usually larger size, less convex and broader form, and by its proportionally wider thorax, which is slightly wider at base than apex. The elytral striæ are less deep and more finely punctured.

Its range of distribution is very extended. It occurs in Canada, Michigan and the Lake Superior region, Manitoba, Colorado, Wyoming, Utah, California, Oregon, Washington and British Columbia, and in the old world throughout a large part of Europe and in Siberia.

6. **B. carinula** Chaud.—Form broad, slightly depressed; color varying from coppery bronze to nearly black. Head slightly narrower than the thorax at apex, alutaceo-granulate; palpi æneo-piceous; antennæ rather less than one-half the length of the body, æneo-piceous, the first joint, and sometimes the second and third at base more or less rufous. Prothorax feebly convex, nearly twice as wide as long, not wider at base than apex, alutaceo-granulate except on the disc, slightly rugose at base and apex, more or less transversely wrinkled along the median line: apex slightly emarginate; median line distinct, abbreviated in front; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, deeply sinuate behind; hind angles prominent, subacute, carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately finely striate, the surface finely granulate with elevated smooth spaces confined to the third interval; striæ finely punctate, the fourth straight; intervals nearly flat, the third with the first fovea at or slightly behind the middle, the second about one-fourth from apex. Beneath dark æneous, shining. Legs varying from æneo-piceous to æneo-testaceous. Length .22-.28 inch; 5.5-7 mm.

A very pretty species, distinct from the others of the group by the proportionally broader thorax with the sides more strongly arcuate in front and more deeply sinuate behind, the hind angles distinctly carinate, and the basal foveæ distinctly bistriate. The elytral inter-

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vals vary from flat to feebly convex, especially the outer ones. The legs are usually æneo-testaceous with the femora at apex and the tarsi darker; their color, however, varies to nearly æneo-piceous, with the femora at base and the tibiæ beneath paler.

It is allied to *lorquini* and *punctatostriatum* by the straight fourth stria of the elytra.

The males appear to be much rarer than the females.

It occurs in New Hampshire, Massachusetts (Springfield), New York (Adirondack Mountains), Georgia, Ohio, Michigan and the Lake Superior region, the Hudson Bay Territory, Illinois, Wisconsin, Arkansas, Oregon and Vancouver Island. At Port Arthur, on the north shore of Lake Superior, I found it to be the most abundant species of the group.

7. **B. lorquini** Chaud.—Form broad, feebly convex; color varying from nearly black to dull bronze, or more rarely coppery. Head as wide as the thorax at apex, alutaceo-granulate; palpi piceous or æneo-piceous; antennæ nearly one-half the length of the body, dark piceous or nearly black, the basal joints more or less æneous, the first rarely rufous. Prothorax distinctly wider than long, slightly wider at base than apex, the surface more or less alutaceo-granulate, slightly rugose at base, feebly transversely wrinkled along the median line; apex nearly truncate; median line distinct, usually abbreviated before and behind; anterior transverse impression nearly obsolete, the posterior distinct; basal impressions moderately deep, unistriate; sides very finely margined, slightly arcuate in front, feebly sinuate behind; hind angles subacute, not carinate. Elytra nearly one-half wider than the thorax, oblong-ovate, rather finely striate, granulate with elevated smooth spaces, which are usually confined to the third interval; striæ finely punctate, the fourth straight; intervals nearly flat, the third with the first fovea about the middle, the second about one-fourth from apex. Beneath dark æneous, shining, the abdomen nearly black. Legs dark æneous, or nearly black. Length .22–.28 inch; 5.5–7 mm.

This species varies in color and in the extent and coarseness of the granulation, some specimens bearing a strong resemblance to *littorale*. These may be at once distinguished by the straight fourth stria of the elytra. From *carinula* it may be readily recognized by the characters given above, while from *punctatostriatum* it differs by the form of the thorax, the less deeply striate elytra with the striæ more finely punctured, and the usually much less shining surface.

Its range of distribution is more limited than that of the others of this group. I have seen specimens from Colorado, Wyoming, Montana, California, Oregon and British Columbia. It seems to be confined to the region west of the Rocky Mountains.

8. **B. punctatostriatum** Say.—Form robust, moderately convex; color bronzed, usually more or less coppery, rarely greenish or bluish, shining. Head

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as wide as the thorax at apex, alutaceous; palpi æneo-piceous, more or less testaceous at base; antennæ about one-half the length of the body, æneo-piceous, the first joint usually rufous beneath or entirely rufous. Prothorax about one-half wider than long, very distinctly wider at base than apex, slightly rugose at base, transversely wrinkled along the median line and sometimes also at the sides; transverse impressions moderately distinct; basal impressions broad, deep, feebly bistriate, the outer stria small and close to the angle or sometimes nearly obsolete; sides with the margin narrowly but distinctly reflexed, slightly arcuate in front, sinuate behind; hind angles prominent, acute. Elytra less than one-half wider than the thorax, oblong-ovate, deeply striate, with the elevated smooth spaces less marked than in the others of the group and confined to the third interval, the outer intervals and tip alutaceous or alutaceo-granulate; striæ deeply punctate, the fourth straight; intervals slightly convex, especially the outer ones, the third with the foveæ less marked, the first slightly in front of the middle, second about one-third from apex. Beneath dark æneous, shining. Legs æneo-piceous, the femora at base and the tibiæ beneath more or less testaceous. Length .22-.30 inch; 6.25–7.5 mm.

The largest species of the group. It seems to vary less than the other species. The thorax is always very distinctly wider at base than apex, with the hind angles prominent, acute, and sometimes with faint traces of a carina. The basal impressions are feebly bistriate, the outer stria in some specimens almost obsolete. The elytral striæ are deep and very distinctly punctate. The surface is more shining than in the others of the group, and, as a consequence, the elevated smooth spaces, so obvious in *littorale*, are here but slightly marked, or almost obsolete, and confined to the third interval. The quadrate foveæ are also usually less marked, being quite feeble in some specimens, while the punctures enclosed by them are larger.

It is most closely related to *lorquini* and *carinula*, but may be readily distinguished by the characters above given, which, with the straight fourth stria of the elytra, will at once separate it from *inæquale* and *littorale*. It seems to make the nearest approach to the next group.

As in *B. carinula*, the males are much less abundant than the females.

It is widely distributed, but appears to be nowhere very common. I have known of its occurrence in Vermont, Massachusetts (Lowell; Springfield), New York (Buffalo), Pennsylvania, Missouri, Arkansas, Montana, California and Washington.

Group iv. **coxendix.**

Maxillæ with the outer lobe biarticulate. Frontal grooves single, straight and parallel; eyes large and prominent. Prothorax subquadrate, either as wide or wider at base than apex, with the basal

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impressions usually more or less bistriate, unistriate in *bowditchi*, and the base truncate, obliquely so each side. Elytra with the humeri subangulate, with a more or less well-defined carina extending to the fifth stria; striæ entire, the eighth distant from the margin; third interval not wider than the others, with two small dorsal punctures placed near the third stria; the quadrate foveæ observed in the last group are here absent.

The two groups are closely allied, Duval (Ann. Soc. Ent. France, 1851, ser. 2, ix, p. 452), in fact, regarding them as one, the present being the equivalent of the second section of his group ii.

Our species, six in number, are closely related. It is hoped the following table will assist in their separation:

Thorax wider at base than apex.

Elytra very deeply striate, the striæ almost crenulately punctate.

Broad, slightly convex; bronzed, shining; head finely alutaceous; thorax one-half wider than long, sides not sinuate behind, hind angles subobtuse; elytra slightly wider than the thorax, widest about one-fourth from base; legs æneo-ferruginous, the femora darker. Length .24-.26 inch.....**carinatum** Lec.

More elongate, convex; bronzed or black, less shining; head and thorax alutaceous, the latter less than one-half wider than long, sides sinuate in front of the hind angles, which are subacute; elytra about one-third wider than the thorax; legs æneo-piceous, the tibiæ slightly paler. Length .24-.27 inch.....**sculpturatum** Mots.

Elytra moderately deeply striate, the striæ rather finely punctate.

Robust; bronzed, shining; thorax nearly twice as wide as long, sides arcuate in front, sinuate behind, hind angles acute; elytra about one-half wider than the thorax; legs rufo-piceous, slightly æneous, the femora rufous at base. Length .23-.25 inch.....**robusticolle** n. sp.

Elytra finely striate, the striæ finely punctate.

Slightly depressed; dull black or feebly bronzed, the surface alutaceous, not shining; thorax scarcely one-half wider than long, sides sinuate behind, basal impressions unistriate, hind angles acute, divergent, prominent; elytra about one-half wider than the thorax; legs black, slightly æneous. Length .22-.24 inch.....**bowditchi** Lec.

Thorax not wider at base than apex.

Feebly convex; bronzed varying to bluish black, shining; thorax about one-half wider than long, sides moderately arcuate in front, sinuate behind, hind angles slightly prominent, subacute; elytra deeply striate, the striæ deeply punctate; legs æneo-piceous, the femora at base and the tibiæ rufous. Length .22-.26 inch.....**coxendix** Say.

More convex; bronzed, usually coppery, elytra with the discs obscurely testaceous; thorax scarcely one-half wider than long, sides arcuate nearly to base, feebly sinuate in front of the hind angles, which are sub-rectangular; elytra moderately deeply striate, the striæ distinctly punctate, the punctures usually greenish; legs testaceous. Length .18-.27 inch.

confusum Nobis.

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9. **B. carinatum** Lec.—Form moderately robust, slightly convex; color coppery bronze, shining. Head slightly narrower than the thorax at apex, inserted therein nearly to the eyes, finely alutaceous; palpi rufo-ferruginous, darker at tip; antennæ scarcely one-half as long as the body, piceous, the first three joints and sometimes the fourth at base rufous. Prothorax rather more than one-half wider than long, very distinctly wider at base than apex, not alutaceous, feebly transversely wrinkled along the median line, slightly rugose at base: apex nearly truncate; median line fine, extending between the transverse impressions, which are moderately distinct; basal impressions broad, deep, bistriate, the outer stria small and close to the angle; sides with the margin very narrowly reflexed, feebly arcuate in front, not sinuate behind; hind angles not prominent, subobtuse but not rounded, finely carinate. Elytra slightly wider than the thorax, widest about one-fourth from base, oblong-ovate, deeply striate; striæ entire, deeply, almost crenulately punctate, the punctures less evident towards the tip; intervals convex, the third with the first dorsal puncture about or slightly behind the middle, the second about one-fifth from apex. Beneath dark æneous, shining. Legs æneo-ferruginous, the femora darker. Length .24-.26 inch: 6-6.5 mm.

Closely allied to *sculpturatum*. The thorax is, however, wider in proportion to its length, not alutaceous, with the sides not sinuate behind and the hind angles subobtuse. The elytra are only slightly wider than the thorax and are widest about one-fourth from base; the striæ are slightly less deep and the intervals somewhat less convex. The form is less elongate, the surface more shining, and the color usually more bronzed. From the other species of the group it may readily be distinguished by the characters previously mentioned.

The specimens in the LeConte collection are labeled "California," but are probably from the Valley of the Colorado River, as the species was described from that region. The only other specimens that I have seen are from Arizona. For the single example in my cabinet I am indebted to Dr. Horn.

10. **B. sculpturatum** Mots.—Form moderately elongate, convex; color varying from bronze to black, more or less shining. Head scarcely narrower than the thorax at apex, alutaceous; palpi piceous; antennæ rather less than one-half the length of the body, the first joint rufous, as are also sometimes the second and third at base. Prothorax nearly one-half wider than long, wider at base than apex, slightly rugose at base, transversely wrinkled along the median line; apex nearly truncate; median line fine, abbreviated in front; transverse impressions feeble, the anterior sometimes nearly obsolete; basal impressions broad, moderately deep, bistriate, the outer stria small and close to the angle; sides with the margin very narrowly reflexed, moderately arcuate, sinuate in front of the hind angles, which are subacute, finely carinate. Elytra about one-third wider than the thorax, oblong-ovate, subparallel, very deeply striate; striæ very deeply, almost crenulately punctate, the punctures scarcely less obvious at apex; intervals very convex, the third with the first dorsal puncture about the middle, the second about one-fourth from apex. Beneath dark æneous, shining. Legs æneo-piceous, the tibiæ usually paler. Length .24 .27 inch; 6-6.75 mm.

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Very closely related to the preceding. It differs in having the thorax longer as compared with its width, with the sides slightly sinuate behind, the hind angles subacute and the surface alutaceous. The elytra are wider as compared with the thorax, somewhat more deeply striate with the intervals slightly more convex. The surface is less shining, and the form more elongate and more convex than in *carinatum*. From *robusticolle* it differs by its proportionally longer thorax, more elongate form and narrower elytra as compared with the thorax, with the striæ deeper and much more strongly punctured.

It was described by Motschulsky from Alaska, and occurs also in California and Arizona.

11. **B. robusticolle** n. sp.—Form robust, convex; color dark bronze, shining. Head as wide as the thorax at apex, very finely alutaceous; palpi rufopiceous; antennæ about one-half the length of the body, piceous, the first joint rufous, as are the second and third beneath. Prothorax nearly twice as wide as long, wider at base than apex, rugose at base and slightly so at apex, transversely wrinkled along the median line; apex slightly emarginate; median line distinct, abbreviated in front; transverse impressions distinct; basal impressions broad, deep, very distinctly bistriate; sides with the margin very narrowly reflexed, moderately arcuate, distinctly sinuate in front of the hind angles, which are prominent, acute and carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately deeply striate; striæ finely punctate, the punctures becoming obsolete towards the tip; intervals slightly convex, the third with the first dorsal puncture about the middle, the second about one-fifth from apex. Beneath dark æneous, shining, the abdomen nearly black. Legs dark rufopiceous, slightly æneous, the femora rufous at base. Length .23-.25 inch; 5.75-6.25 mm.

This species is quite closely allied to the two preceding. It is, however, more convex. The thorax is wider in proportion to its length, with the sides more deeply sinuate behind, the basal impressions more strongly bistriate and the hind angles more prominent and acute. The elytra are wider as compared with the thorax, with the striæ less deep and much more finely punctured. It has quite a different facies from either.

Described from one male in my cabinet from Iowa. Specimens have also been seen from Michigan and Kansas.

12. **B. bowditchi** Lec.—Form moderately broad, slightly depressed; color dull black, sometimes slightly bronzed, not shining, the surface alutaceous or alutaceo-granulate. Head as wide as the thorax at apex; palpi black; antennæ about one-half the length of the body, black. Prothorax scarcely one-half wider than long, wider at base than apex; apex slightly emarginate: median line distinct, entire; anterior transverse impression obsolete or nearly so, the posterior

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distinct; basal impressions small, unistriate; sides with the margin very narrowly reflexed, arcuate in front, moderately deeply sinuate behind: hind angles acute, divergent, not carinate. Elytra about one-half wider than the thorax, oblong-ovate, finely striate; striæ entire, finely but distinctly punctate, the punctures becoming obsolete towards the tip; intervals nearly flat, the third with the first dorsal puncture slightly in front of the middle, the second about one-fifth from apex. Beneath dark æneous, shining. Legs nearly black, with more or less æneous lustre. Length .22-.24 inch; 5.5–6 mm.

Smaller, more depressed and less shining than any of the preceding species of the group, from which it also differs by the thorax with the sides deeply sinuate behind, the basal impressions unistriate, and the hind angles more acute and not carinate. The elytra are more finely striate, with the intervals nearly flat. It resembles most closely certain forms of *coxendix*, but may be distinguished by the thorax wider at base than apex, with the basal foveæ unistriate, the hind angles acute, divergent and not carinate, and by the more finely striate elytra and nearly black legs. The differences in the thorax between this and the next species are, as remarked by Dr. LeConte, nearly the same as those exhibited between *lorquini* and *carinula* in the last group.

I have seen but eight specimens of this species, all collected at Green River City, Wyo., by Mr. F. C. Bowditch, to whom I am indebted for the single example in my cabinet.

13. **B. coxendix** Say.—Form slightly elongate, feebly convex; color bronzed, varying to bluish black, shining. Head as wide as the thorax at apex, alutaceous; palpi piceous; antennæ about one-half as long as the body, piceous, the first joint and sometimes the second and third at base rufous. Prothorax about one-half wider than long, not wider at base than apex, finely rugose at base, feebly transversely wrinkled along the median line; apex feebly emarginate: median line distinct, abbreviated in front and usually behind; transverse impressions distinct; basal impressions broad, deep, feebly bistriate, the outer stria smaller and less distinct; sides with the margin very narrowly reflexed, moderately arcuate in front, sinuate behind: hind angles slightly prominent, subacute, very finely or obsoletely carinate. Elytra about one-third wider than the thorax, oblong-ovate, deeply striate; striæ deeply punctate, less distinctly towards the apex; intervals convex, the third with the first dorsal puncture about the middle, the second about one-fifth from apex. Beneath dark æneous, shining. Legs æneo-piceous, the femora at base and the tibiæ rufous. Length .22-.26 inch; 5.5–6.5 mm.

This species varies in color as indicated above. From the next, which was described by Dejean under the name *nitidulum*, it seems distinct by the characters above given, while from the others of the group it may be distinguished by the thorax not wider at base than apex. Nearly black specimens bear considerable resemblance to *bowditchi*.

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I have taken it at Winnipeg, Manitoba, and have seen specimens from Lake Superior, Illinois, Nebraska, Kansas, Colorado, New Mexico and Texas.

14. **B. confusum** Nobis.—Form moderately robust, convex; color usually coppery bronze, rarely nearly black, shining, elytra with the discs obscurely testaceous. Head as wide as the thorax at apex, alutaceous; palpi testaceous, darker towards the tip; antennæ about one-half the length of the body, piceous, the first three joints and base of fourth testaceous. Prothorax rather less than one-half wider than long, not wider at base than apex, feebly transversely wrinkled along the median line, finely rugose at base; apex nearly truncate; anterior transverse impression usually feeble or nearly obsolete, the posterior moderately distinct; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, arcuate nearly to base, feebly sinuate in front of the hind angles, which are not prominent, subrectangular and feebly carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately deeply striate; striæ distinctly punctate, the punctures usually greenish, less obvious towards the tip; intervals slightly convex, the third with the first dorsal puncture slightly behind the middle, the second about one-fifth from apex. Beneath black, usually strongly tinged with green, shining, the epipleuræ more or less testaceous. Legs testaceous. Length .18–.27 inch; 4.5–6.75 mm.

The name *nitidulum*, under which this species was described by Dejean, being preoccupied, the above is proposed in its place.

It has for a long time been regarded as a variety of the preceding, but seems to me too distinct to be retained as such. It differs from *coxendix* by its more robust form, proportionally longer thorax, with the sides arcuate nearly to base and feebly sinuate in front of the hind angles, which are subrectangular and not prominent. The elytra are less deeply striate with the punctures usually greenish, the intervals less convex and the discs obscurely testaceous. The legs are entirely pale testaceous. It varies greatly in size.

It occurs throughout the Eastern and Central States, being known to me from New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia, Georgia, Kentucky, Indiana, the Lake Superior region, Iowa and Colorado.

Group v. **honestum**.

Maxillæ with the outer lobe bi-articulate. Frontal grooves single, straight, parallel; eyes large, prominent. Prothorax subquadrate, more or less narrowed behind; basal impressions unistriate; base truncate, obliquely so each side; hind angles not carinate. Elytra with the striæ entire, punctate, the eighth distinct and moderately distant from the margin; third stria with two dorsal punctures; humeri subangulate.

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This group differs from all the others in which the dorsal punctures are situated on the third stria by the subangulate humeri of the elytra, and from all but the next in having the eighth stria distinct from the margin. The species are above the average size and some of them resemble each other very closely. In the first two the head and thorax are alutaceous, the latter usually very finely or not at all so on the disc, and in the first the elytra are usually coarsely alutaceous at the sides, being very finely so in the second. In the next three the surface is sometimes very finely, sometimes not at all alutaceous, this character being so variable as to be of no service in their separation.

The following species occur in our fauna:

Elytra with the dorsal punctures large, round, foveiform.

Thorax very distinctly narrower at base than apex, sides strongly arcuate, sinuate in front of the hind angles, which are obtuse; elytra finely striate, the outer intervals usually coarsely alutaceous and subopaque. Length .27-.30 inch.....**bifossulatum** Lec.

Thorax slightly narrower at base than apex, sides moderately arcuate in front, slightly sinuate behind, hind angles subrectangular; elytra finely striate, very finely alutaceous, shining. Length .20-.24 inch.

americanum Dej.

Elytra with the dorsal punctures normal.

Form broad, dilated, depressed; thorax narrower at base than apex, sides strongly arcuate in front, sinuate behind, hind angles obtuse; elytra moderately deeply striate, much more finely at tip; legs dark rufous. Length .26-.29 inch.....**dilatatum** Lec.

More elongate, feebly convex; thorax scarcely narrower at base than apex; apex emarginate, sides slightly arcuate in front, feebly sinuate behind, hind angles subrectangular; elytra more deeply striate; legs piceous, the femora at base and the tibiæ often rufous. Length .23-.27 inch.

honestum Say.

More convex; thorax more narrowed behind, apex truncate, sides strongly arcuate in front, sinuate behind, hind angles subrectangular; elytra more deeply striate, the striæ more deeply, almost crenulately punctate. Length .22-.25 inch.....**chalceum** Dej.

Elongate, depressed; thorax slightly narrower at base than apex, sides arcuate in front, sinuate behind, hind angles acute, slightly prominent; elytra moderately finely striate, with an ill-defined discal spot about one-third from apex testaceous; legs rufous. Length .20-.23 inch.

blanchardi n. sp.

15. **B. bifossulatum** Lec.—Form moderately broad, depressed: color æneous or coppery bronze, rarely black, the head, thorax and sides of the elytra usually more or less coarsely alutaceous and subopaque. Head large, as wide as or slightly wider than the thorax at apex; palpi piceous or nearly black; antennæ nearly one-half as long as the body, nearly black, the basal joints somewhat

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æneous, the first rarely rufous beneath. Prothorax nearly twice as wide as long, distinctly narrower at base than apex, more or less transversely wrinkled along the median line, rugose at base; apex emarginate; median line distinct, extending between the transverse impressions, which are distinct; basal impressions broad, moderately deep; sides with the margin narrowly reflexed, strongly arcuate, sinuate for a short distance in front of the hind angles, which are obtuse, but not rounded. Elytra about one-half wider than the thorax, oblong-ovate, finely striate, more finely towards the tip; striæ distinctly punctate to behind the middle, the third with the dorsal punctures large, round, foveiform, the first about the middle, the second about one-fourth from apex; intervals flat or nearly so. Beneath greenish black, shining. Legs æneo-piceous, the femora sometimes more or less rufous at base. Length .27–.30 inch; 6.75–7.5 mm.

The largest species of the group. It is most nearly allied to *americanum*, from which it differs by its larger size, more depressed form and proportionally wider thorax, which is more narrowed behind, with the sides more strongly arcuate. The elytra are usually more coarsely alutaceous, especially at the sides, the amount of shining surface being often confined to the three or four inner intervals. This is, however, subject to some variation.

It occurs from the Rocky Mountain region westward to the Pacific coast. Specimens have been seen from Nebraska, Kansas, Wyoming, Colorado, Texas, New Mexico, Utah, California, Oregon, Washington, British Columbia and Vancouver Island.

16. **B. americanum** Dej.—Form moderately broad, slightly depressed; color æneous, more or less coppery, shining. Head as wide as the thorax at apex, alutaceous, subopaque; palpi rufo-piceous, slightly paler at base: antennæ about one-half the length of the body, piceous, the first joint and sometimes the second and third at base more or less rufous. Prothorax rather more than one-half wider than long, slightly narrower at base than apex, finely rugulose at base; apex nearly truncate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions rather shallow: sides with the margin very narrowly reflexed, moderately arcuate in front, slightly sinuate behind; hind angles subrectangular. Elytra about one-half wider than the thorax, oblong-ovate, finely striate, more finely at sides and tip; striæ distinctly punctate to behind the middle, the third with the dorsal punctures as in *bifossulatum*, the first very slightly in front of the middle, the second about one-fourth from apex. Beneath greenish black, shining. Legs æneo-piceous, the femora at base and the tibiæ beneath rufous. Length .20–.24 inch; 5–6 mm.

Smaller than *bifossulatum*, with the surface more shining and very finely alutaceous. The thorax is slightly longer in proportion to its width and less narrowed behind, with the sides less strongly arcuate, the apex nearly truncate and the hind angles subrectangular The elytra are usually more finely striate, with the striæ more finely punctured. The antennæ, palpi and femora are more rufous at base and the tibiæ are rufous beneath.

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It extends over the greater part of the region east of the Rocky Mountains, being known to me from Maine, New York, New Jersey, Pennsylvania, Delaware, South Carolina, Ohio, Michigan, Kentucky, Illinois, Iowa, Missouri, Louisiana and Texas.

17. **B. dilatatum** Lec.—Form broad, dilated moderately depressed; color bronzed, shining. Head slightly narrower than the thorax at apex; palpi rufous, darker at tip; antennæ about one-half as long as the body, piceous, the first joint rufous. Prothorax more than one-half wider than long, narrower at base than apex, slightly rugose at base; apex nearly truncate, median line distinct, extending between the transverse impressions, which are distinct; basal impressions moderately deep; sides with the margin narrowly reflexed, strongly arcuate in front, distinctly sinuate behind; hind angles obtuse, but not rounded. Elytra about one-half wider than the thorax, oblong-oval, moderately deeply striate, more finely at tip; striæ distinctly punctate to behind the middle, the third with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals flat. Beneath more or less tinged with green, shining. Legs dark rufous. Length .26–.29 inch; 6.5–7.25 mm.

So far as can be judged from the small amount of material examined, this species seems distinct by the above characters.

But two specimens are known to me, LeConte's type from Columbia, Pa., and one in Dr. Horn's cabinet from the Indian Territory.

18. **B. honestum** Say.—Form rather elongate, feebly convex; color æneous, usually more or less coppery, more rarely bluish or greenish, shining. Head as wide as the thorax at apex; palpi piceous, more or less rufous at base; antennæ about one-half the length of the body, piceous, the first joint more or less rufous. Prothorax less than one-half wider than long, scarcely narrower at base than apex, rugose at base; apex slightly emarginate; median line deep, abbreviated before and behind; transverse impressions distinct; basal impressions moderately deep; sides with the margin narrowly reflexed, slightly arcuate in front, feebly sinuate behind; hind angles subrectangular. Elytra about one-half wider than the thorax, oblong-ovate, moderately deeply striate, less deeply towards the apex; striæ distinctly punctate, the punctures becoming obsolete at tip; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals slightly convex. Beneath black, slightly tinged with green, shining. Legs æneo-piceous, the femora at base and sometimes the tibiæ more or less rufous. Length .23–.27 inch; 5.75–6.75 mm.

More convex than *dilatatum*, than which it is also more slender. The thorax is proportionally less wide as compared with its length and less narrowed behind, with the hind angles subrectangular. It is most nearly related to the next species, but the form is less convex and the thorax scarcely narrower at base than apex, with the sides less arcuate in front and less sinuate behind. The elytra are less deeply striate, with the striæ less deeply punctured.

The name *honestum* Say has several years priority over that of

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antiquum Dej., which is the one by which this species has been previously known. Say's name must, therefore, be restored.

It occurs in Canada, the New England States, New York, New Jersey, Pennsylvania, the District of Columbia, Virginia, Illinois, Wisconsin, Iowa, Wyoming and Texas.

19. **B. chalceum** Dej.—Form rather more slender and more convex than *honestum;* color usually more or less coppery bronze, more rarely greenish or bluish black. Head as in *honestum*. Prothorax about one-half wider than long, slightly narrower at base than apex, more convex than in *honestum*, more or less rugose at base; apex truncate, median line distinct, abbreviated in front and behind; anterior transverse impression usually feeble, the posterior distinct; basal impressions rather small, moderately deep; sides with the margin very narrowly reflexed, strongly arcuate in front, distinctly sinuate behind; hind angles subrectangular. Elytra about one-half wider than the thorax, oblong-oval, deeply striate; striæ deeply, almost crenulately punctate nearly to tip, scarcely less deep at apex; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals convex. Beneath greenish black, shining. Legs rufo-piceous, the femora at base and sometimes the tibiæ paler. Length .22-.25 inch; 5.5-6.25 mm.

Most nearly related to the preceding, of which I was at first inclined to regard it as only a variety. It is, however, more convex, and the thorax is proportionally slightly wider as compared with its length, with the apex truncate and the sides more strongly arcuate in front and more deeply sinuate behind. The striæ of the elytra are deeper and more deeply punctured, and the intervals more convex. It averages slightly smaller in size.

It occurs in Canada, Massachusetts, New York, New Jersey, Virginia, Ohio, the Lake Superior region, Wisconsin, Iowa and Colorado, but seems to be nowhere as abundant as the preceding.

20. **B. blanchardi** n. sp.—Form slender, elongate, slightly depressed. Head and thorax nigro-æneous, distinctly tinged with green, elytra æneous, with an ill-defined discal spot about one-third from apex testaceous; surface shining. Head slightly wider than the thorax at apex; palpi piceous or rufo-piceous; antennæ scarcely one-half as long as the body, piceous, the first joint rufous. Prothorax nearly one-half wider than long, slightly narrower at base than apex, finely rugose at base: apex feebly emarginate; median line deep, extending between the transverse impressions, which are distinct; basal impressions rather shallow; sides with the margin narrowly reflexed, arcuate in front, distinctly sinuate behind; hind angles moderately prominent, acute. Elytra about one-half wider than the thorax, elongate, oblong-ovate, subparallel, moderately finely striate, more finely towards the tip; striæ distinctly punctate to behind the middle, the third with the first dorsal puncture very slightly in front of the middle, the second about one-fourth from apex; intervals nearly flat. Beneath black, shining. Legs rufous. Length .20-.23 inch; 5-5.75 mm.

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A very pretty species, distinct from its allies by the characters above given. The humeri of the elytra are more nearly rounded than in the others of the group, of which it is the only species in which the hind angles of the thorax are acute. The ill-defined pale spot on the elytra, above mentioned, is visible in all the specimens examined.

It is known to me only from Lowell, Mass., where it has been taken in moderate abundance by Mr. Frederick Blanchard, to whom I am indebted for the series in my cabinet, and to whom it gives me pleasure to dedicate this species.

Group vi. concolor.

Maxillæ with the outer lobe bi-articulate. Frontal grooves single, straight, parallel; eyes moderately large and prominent. Prothorax subquadrate or quadrate, truncate at base. Elytra with two dorsal punctures on the third stria; humeri rounded; eighth stria distinct from the margin.

This group may be distinguished from the last by the rounded humeri of the elytra, while from the next it differs in having the eighth elytral stria distinct from the margin. It includes LeConte's sixth and seventh groups, that author having placed *nigrum* in a group by itself, based upon its more convex form, with nearly all the striæ of the elytra abbreviated behind. The striation, however, varies in the different species, all the striæ being entire in *concolor* and *recticolle*, while in *quadrulum* and *longulum* the outer ones are slightly effaced at tip. Finally, in *brevistriatum* they are represented by rows of rather sparsely placed, large punctures which do not attain the apex.

The six species known to me may thus be separated:

Robust, very convex; nigro-æneous, the elytra often tinged with green; thorax one-half wider than long, narrower at base than apex; elytra deeply striato-punctate, the striæ dilated, the first and second entire, the others abbreviated behind, the fifth represented by a groove at tip; base of antennæ and legs rufous. Length .15–.18 inch..... **nigrum** Say.

Slightly elongate, convex; black, slightly æneous; thorax less than one-half wider than long, narrower at base than apex; striæ of elytra composed of rather sparsely placed, large punctures not attaining the apex; base of antennæ and legs rufous. Length .15–.17 inch.

brevistriatum n. sp.

Less convex; elytra with at least the two inner striæ and the fifth or seventh entire.

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Elytra with all the striæ entire.

Elongate, slightly depressed; black, scarcely æneous; thorax slightly wider than long, as wide at base as apex; elytra deeply striate, the striæ finely punctate; legs black. Length .15–.19 inch..... **recticolle** Lec.

More robust; nigro-æneous, elytra sometimes tinged with brownish; thorax one-half wider than long, scarcely narrower at base than apex: elytra deeply striato-punctate; legs piceous or rufo-piceous. Length .15–.20 inch..... **concolor** Kirby.

Elytra with the first, second and fifth or seventh striæ entire; thorax one-half wider than long; legs piceous or black.

Black, slightly æneous; thorax as wide at base as apex; apex emarginate. Length .16–.19 inch..... **quadrulum** Lec.

More elongate; thorax narrower at base than apex; apex truncate. Length .15–.18 inch..... **longulum** Lec.

21. **B. nigrum** Say.—Form robust, convex; color nearly black, shining, the head and thorax usually slightly bronze, the elytra somewhat æneous, often tinged with green. Head as wide as the thorax at apex; palpi rufous, slightly darker at tip; antennæ about one-half the length of the body, dark fuscous, the basal joints testaceous. Prothorax about one-half wider than long, slightly narrower at base than apex; apex truncate; median line distinct, abbreviated before and behind; anterior transverse impression nearly obsolete, the posterior distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, obsoletely sinuate behind; hind angles subrectangular, finely carinate. Elytra about one-half wider than the thorax, oblong-oval, deeply striata; striæ dilated, deeply punctate, the punctures becoming evanescent behind, the first and second entire, the others abbreviated behind, becoming shorter as they approach the sides, the fifth represented by a groove at tip; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex, intervals convex. Beneath black, shining. Legs rufous, or rufo-testaceous. Length .15–.18 inch; 3.75–4.5 mm.

A very pretty little species, easily recognizable from the others of the group by its more robust and convex form and by the striation of the elytra.

It is widely distributed throughout the Eastern and Central States, being known to me from the New England States, New York, New Jersey, Pennsylvania, Delaware, Maryland, Georgia, the Lake Superior region, Iowa and Missouri.

22. **B. brevistriatum** n. sp.—Form slightly elongate, convex; color black, slightly æneous, shining. Head as wide as the thorax at apex; palpi rufo-testaceous, darker towards the tip; antennæ about one-half as long as the body, dark fuscous, the basal joints paler. Prothorax slightly subquadrate, scarcely one-half wider than long, slightly narrower at base than apex; apex nearly truncate; median line fine, sub-entire; transverse impressions very feeble; basal impressions moderately deep, rather feebly bistriate; sides with the margin very narrowly reflexed, arcuate in front, slightly sinuate behind; hind angles rectangular, with a short, fine carina. Elytra about one-half wider than the thorax, oblong-oval, with rows of not closely placed, deep punctures, in place of striæ, not at-

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taining the apex, the fifth represented by a feeble groove at tip, the third with two dorsal punctures, the first about one-third from base, the second about one-third from apex; intervals flat. Beneath black, shining. Legs rufo-testaceous. Length .15–.17 inch; 3.75-4.25 mm.

A very singular little species, and one with affinities in several directions. The eighth elytral stria being distinct from the margin, the dorsal punctures on the third stria, and the humeri rounded, it seems best placed next to *nigrum*. The thorax is, however, less quadrate than in that species and all the striæ of the elytra are abbreviated behind. When we compare it with *B. semistriatum* the resemblance is very striking, but the peculiar arrangement of the dorsal punctures in the last-named species excludes any association with it.

It occurs in California. Specimens have been sent to me from Dunsmuir (Wickham), the Pomona Mountains (Fall), and Santa Rosa (Ricksecker).

23. **B. longulum** Lec.—Form elongate, scarcely depressed; color black, more or less æneous, shining. Head slightly narrower than the thorax at apex; palpi black; antennæ about one-half as long as the body, dark piceous or black. Prothorax about one-half wider than long, slightly narrower at base than apex; apex truncate; median line deep, usually abbreviated at each end; transverse impressions moderately distinct, the posterior deeper; basal impressions deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, feebly sinuate behind; hind angles sub-obtuse, but not rounded, finely carinate. Elytra less than one-half wider than the thorax, oblong-ovate, deeply striate, the first, second, third and seventh striæ entire, the others slightly abbreviated behind; striæ punctate to behind the middle, the third with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals feebly convex. Beneath black, shining. Legs dark piceous or black. Length .15-.18 inch; 3.75-4.5 mm.

Distinct from the others of the group by the characters above given.

It occurs in the Lake Superior region, the mountainous parts of Wyoming, Colorado and Utah, and in California and Washington In Dr. Horn's collection there is one specimen from Santa Monico, S. Cal.

24. **B. quadrulum** Lec.—Form broad, slightly depressed; color black, more or less æneous, shining. Head scarcely as wide as the thorax at apex; palpi black; antennæ about one-half the length of the body, dark piceous or black. Prothorax about one-half wider than long, as wide at base as apex; apex emarginate; median line distinct, abbreviated at each end; transverse impressions distinct; basal impressions moderately deep, bistriate; sides with the margin narrowly reflexed, slightly arcuate in front, obsoletely sinuate behind; hind angles subrectangular, finely carinate. Elytra rather less than one-half wider

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than the thorax, oblong-ovate, striate as in *longulum*. Beneath black, shining. Legs dark piceous or black. Length .16-.19 inch; 4-4.75 mm.

This species resembles *recticolle* in having the thorax as wide at base as apex, but is distinct by its broader form, proportionally wider thorax and abbreviated outer elytral striæ. The latter character allies it to *longulum*. From *concolor* it is distinct by its more depressed form and by the striation of the elytra and form of the thorax. The latter is more quadrate, with the sides more nearly parallel, in this species and *recticolle* than in the others of the group.

Its range of distribution is nearly the same as that of the last-named species, but it is less abundant and apparently more local. It occurs from the Rocky Mountain region westward to the Pacific coast.

25. **B. concolor** Kirby.—Form moderately broad, feebly convex; color black, more or less bronzed, the elytra often somewhat brownish or purplish with æneous lustre. Head slightly narrower than the thorax at apex; palpi piceous or rufo-piceous; antennæ about one-half the length of the body, piceous, the first joint more or less tinged with rufous. Prothorax about one-half wider than long, scarcely narrower at base than apex; apex feebly emarginate; median line distinct, usually abbreviated before and behind; anterior transverse impression rather feeble, or sometimes nearly obsolete, the posterior distinct; basal impressions moderately deep, scarcely rugose, bistriate, the outer stria smaller; sides with the margin narrowly reflexed, arcuate in front, obsoletely sinuate behind; hind angles obtuse, but not rounded, with a short, fine carina. Elytra nearly one-half wider than the thorax, oblong-oval, deeply striate; striæ very distinctly punctate, the punctures becoming obsolete towards the tip, the seventh slightly grooved at apex; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals slightly convex. Beneath black, shining. Legs piceous, or rufo-piceous. Length .15-.20 inch; 3.75-5 mm.

This species resembles most closely *B. quadrulum*, from which it differs in having the thorax very slightly narrower at base than apex and the elytral striæ entire. With *recticolle* it agrees in having the striæ of the elytra not abbreviated behind. It is, however, more robust, and differs in the form of the thorax.

It is essentially a Northern species, occurring from Lake Superior to the Pacific coast. I have never known of its occurrence further South than Cheyenne, Wyo. I have seen one specimen from Sebago Lake, Me. (Blanchard).

26. **B. recticolle** Lec.—Form elongate, slightly depressed; color black, shining, often with more or less æneous lustre. Head as wide as the thorax at apex; palpi black; antennæ about one-half as long as the body, black. Prothorax slightly wider than long, as wide at base as apex, scarcely rugose at base; apex feebly emarginate; median line deep, abbreviated before and behind; anterior transverse impression rather feebly marked, the posterior distinct; basal

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impressions rather small, bistriate; sides with the margin very narrowly reflexed feebly arcuate in front, nearly parallel behind; hind angles rectangular, finely carinate. Elytra scarcely one-half wider than the thorax, oblong-ovate, moderately deeply striate; striæ entire, punctate, the punctures becoming obsolete towards the tip; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals slightly convex. Beneath black, shining. Legs black. Length .15–.19 inch; 3.75–4.75 mm.

More elongate and depressed than *concolor*, from which it is abundantly distinct by the proportionally longer thorax, which is as wide at base as apex, with the hind angles rectangular. The elytra are less deeply striate, with the striæ more finely punctured, and the legs are black. From *quadrulum* and *longulum* it differs in having all the elytral striæ entire, the thorax proportionally less wide as compared with its length, and from the latter, in addition, by the thorax not narrower at base than apex.

From a very careful study of Chaudoir's description I am convinced that *tetragonoderum* is synonymous with this species.

It extends from the Rocky Mountain region westward to the Pacific coast, occurring in Wyoming, Colorado, New Mexico, Nevada, California and Washington.

Group vii. **planatum.**

Mouth-parts as in the last group. Frontal grooves single, straight, parallel; eyes large, prominent. Prothorax trapezoidal, scarcely convex, truncate at base; basal impressions bistriate, the outer stria as long as, or longer than the inner; hind angles distinctly carinate. Elytra without paler markings, usually finely striate; third stria with two dorsal punctures; humeri rounded; eighth stria not distinct from the margin. Legs usually piceous or black, sometimes rufo-piceous.

In the above definition of the group no mention is made as to whether the head is alutaceous or not. The reason for this is, that in some species it is either shining or finely alutaceous, but I have been unable to make use of this character in their separation. This is most noticeable in *funereum*, *mæklini* and their allies, and it is to be noted that the head is most apt to be alutaceous in specimens from more Northern regions.

This is one of the most difficult groups of the genus for study. Many of the species resemble each other very closely, and it is by no means improbable that some of them may have to be united when more collecting shall have been done in Alaska and the extreme Northwest. A large number of those herein contained were de-

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scribed by Mannerheim and Motschulsky, and as these author's descriptions are very meagre and their types in European collections, it has been impossible to identify all of the species described by them. *B. kuprianovi* and *biimpressum*, of Mannerheim, remain unidentified, while *ovipenne* Mots., although unknown to me in nature, is placed as a synonym of *kuprianovi* on the authority of Gemminger and Harold. To *breve* Mots. I have referred several specimens, which, after careful study of his and of Mannerheim's descriptions, seem, without much doubt, to belong to that species.

The following table of those known to me has been prepared with the hope that it may afford some assistance in their separation:

Large species.

Form depressed; thorax slightly wider than long, as wide at base as apex; elytra finely striate, the striæ entire, very finely or obsoletely punctulate; legs piceous. Length .27–.35 inch..... **planatum** Lec.

Smaller species [less than .25 inch.]

Elytra with the striæ impunctate, entire.....2.

Elytra with the striæ punctate.....4.

2. Elytra distinctly wider than the thorax.....3.

Elytra only slightly wider than the thorax, finely striate, the outer striæ very fine, especially towards the tip; depressed; black, more or less bronzed; thorax nearly twice as wide as long, sides arcuate to base, hind angles obtuse, but not rounded; legs black. Length .17–.23 inch.

incertum Mots.

3. Form depressed.

Elongate; thorax distinctly narrower at base than apex, sides arcuate in front, at most obsoletely sinuate behind, hind angles obtuse, but not rounded; elytra usually brownish, moderately deeply striate; legs rufo-piceous. Length .16–.19 inch..... **simplex** Lec. mss.

Slightly broader; thorax scarcely narrower at base than apex.

Sides of thorax arcuate in front, sinuate behind, hind angles rectangular; elytra often tinged with brown, rather more finely striate; legs varying from rufo-piceous to black. Length .16–.20 inch.

planiusculum Mann.

Smaller: sides of thorax arcuate in front, obsoletely sinuate behind, hind angles sub-obtuse; elytra moderately deeply striate; color bluish black; legs black, tibiæ and tarsi sometimes piceous. Length .12–.16 inch.

complanulum Mann.

Form slightly convex.

Elytra nearly oval; thorax narrower at base than apex; form elongate.

Thorax slightly wider than long, hind angles rectangular; elytra finely striate, the striæ less marked at sides and tip; color æneo-piceous or nearly black, elytra usually tinged with brown; legs rufo-piceous or piceous. Length .17–.21 inch..... **funereum** Lec

Thorax about one-half wider than long, less convex, hind angles subacute; elytra more deeply striate, scarcely less deeply at sides and apex; color black, strongly tinged with blue; legs black, tibiæ and tarsi more or less piceous. Length .19–.24 inch..... **nigrocæruleum** n. sp.

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Elytra oblong-oval; form broader and less convex.

Thorax about one-half wider than long, scarcely narrower at base than apex, sides obsoletely sinuate behind, hind angles subrectangular; elytra more than one-half wider than the thorax, moderately deeply striate, dorsal punctures large; legs black. Length .16-.21 inch. **quadrifoveolatum** Mann.

Thorax about one-half wider than long, as wide at base as apex, sides not sinuate behind, hind angles sub-obtuse; elytra about one-half wider than the thorax, finely striate, more finely at sides and tips; legs rufo-piceous. Length .18-.20 inch..... **maekliui** Lec. mss.

4. Thorax slightly narrower at base than apex.

Broad, slightly depressed; black, usually bronzed, very shining; elytra finely striate, with five or six striæ, the first only entire; legs black. Length .16-.18 inch..... **breve** Mots.

Elongate, depressed; black, slightly æneous; sides of thorax arcuate in front oblique behind, hind angles obtuse, but not rounded; elytra finely striate, the striæ entire, very fine at sides and tip; legs piceous or nearly black. Length .16-.20 inch..... **nebraskense** Lec.

27. **B. planatum** Lec.—Form moderately broad, very depressed; color nearly black, often more or less æneous, moderately shining, the elytra usually tinged with brownish. Head as wide as the thorax at apex; palpi black; antennæ rather more than one-half the length of the body, nearly black. Prothorax slightly wider than long, as wide at base as apex, slightly rugose at base; apex nearly truncate; median line distinct, abbreviated in front; transverse impressions distinct, the anterior angulate; basal impressions broad, deep, bistriate; sides with the margin distinctly reflexed, arcuate in front, feebly sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately finely striate; striæ entire, very finely or obsoletely punctulate, the fifth feebly sinuate near the apex and grooved at tip; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fifth from apex; intervals flat. Beneath black, shining. Legs varying from piceous to black. Length .27-.35 inch; 6.75-8.75 mm.

Our largest species of the genus. It is easily distinguishable by its size from the others of the group. The form is usually very depressed, rather less so in Pacific coast specimens. The color is usually nearly black, frequently with more or less æneous lustre, the elytra often brownish. The striæ are very finely or obsoletely punctulate, rather more distinctly so in specimens from the extreme Northwest. At first sight it recalls certain species of *Platynus*.

It occurs in the Lake Superior region, the Rocky Mountains, Nevada, Oregon, Washington and British Columbia. I have taken it abundantly at various localities in the more mountainous parts of Colorado.

28. **B. simplex** Lec. mss.—Form slender, elongate, slightly depressed; color nearly black, shining, the elytra usually more or less brownish. Head as wide as the thorax at apex; palpi piceous; antennæ about one-half the length of the

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body, piceous. Prothorax scarcely one-half wider than long, narrower at base than apex, scarcely rugose at base; apex nearly truncate; median line deep, abbreviated in front and usually behind; transverse impressions distinct; basal impressions deep, bistriate; sides with the margin distinctly reflexed, arcuate in front, oblique, obsoletely sinuate behind; hind angles obtuse, but not rounded, carinate. Elytra about one-half wider than the thorax, oblong-oval, moderately deeply striate; striæ entire, impunctate, less deeply impressed at sides and tip, the fifth grooved at apex; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals slightly convex. Beneath black, shining. Legs varying from rufo-piceous to piceous. Length .16–.19 inch; 4–4.75 mm.

No description of this species has heretofore been published. I have accordingly adopted the name used by Dr. LeConte in his "List of North American Coleoptera" (Smiths. Misc. Coll., 1863, vi, p. 14) and in his collection, and under which specimens have been distributed by him.

It is quite closely allied to *planiusculum*, but differs by its usually more elongate, less depressed form, with the thorax more narrowed behind and the hind angles obtuse. The basal impressions are less broad and the sides are oblique, or at most only obsoletely sinuate behind. The legs vary from nearly rufous to piceous.

It is distinctly Northern in its distribution, occurring in Labrador, Canada, the Hudson Bay Territory, New Hampshire, Vermont, Massachusetts and the Lake Superior region, and I have seen one specimen from as far South as Missouri. It has also been taken at Highlands, N. C., by Mr. Blanchard.

29. **B. planiusculum** Mann.—Form moderately broad, depressed: color nigro-æneous or æneo-piceous, the elytra often more or less brownish, shining. Head scarcely narrower than the thorax at apex; palpi piceous: antennæ about one-half as long as the body, piceous. Prothorax about one-half wider than long, scarcely narrower at base than apex, finely rugose at base; apex truncate; median line deep, abbreviated before and behind; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin distinctly reflexed, slightly arcuate in front, more or less sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-oval, rather finely striate; striæ entire, impunctate, the outer ones less deeply impressed, the fifth grooved at tip; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals nearly flat. Beneath black, shining. Legs varying from nearly black to rufo-piceous. Length .16–.20 inch; 4–5 mm.

Broader and more depressed than the preceding, from which it also differs by the sides of the thorax sinuate behind, the hind angles rectangular, and the base scarcely narrower than the apex.

It exhibits considerable variation in the series before me. The

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head is either nearly or quite as wide as the thorax at apex. The depth of the sinuation of the sides of the thorax varies slightly, as does also the width at base as compared with that at apex. The elytra vary somewhat in the depth of the striation and in color from brownish to black. Lastly, the legs exhibit every gradation of color from rather pale rufo-piceous to nearly black.

It occurs abundantly in the Rocky Mountain region, extending westward to the Pacific coast and northward to Alaska.

30. **B. complanulum** Mann.—Rather short, depressed; color black, often slightly tinged with blue, shining. Head as wide as the thorax at apex; palpi black; antennæ about one-half the length of the body, black. Prothorax about one-half wider than long, scarcely narrower at base than apex, finely rugose at base; apex nearly truncate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, slightly arcuate in front, obsoletely sinuate behind; hind angle sub-obtuse, but not rounded, carinate. Elytra scarcely one-half wider than the thorax, oblong-ovate, moderately deeply striate; striæ entire, impunctate, scarcely less deep at sides and apex, the fifth grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-fourth from apex; intervals nearly flat. Beneath black, shining. Legs black, the tibiæ and tarsi sometimes piceous. Length .12-.16 inch; 3-4 mm.

The smallest species of the group. It is most nearly related to *planiusculum*, but is quite easily recognizable by the above characters. The thorax varies somewhat in width as compared with its length.

It occurs on the Pacific coast from Alaska to California, extending eastward to the Rocky Mountains, but appears to be local.

31. **B. funereum** Lec.—Form rather elongate, slightly convex; color nearly black, feebly æneous, the elytra more or less tinged with brown, shining. Head scarcely narrower than the thorax at apex; palpi piceous; antennæ about one-half the length of the body, piceous. Prothorax moderately convex, slightly wider than long, slightly narrower at base than apex, rugose at base; apex feebly emarginate; median line distinct, usually abbreviated in front; anterior transverse impression feeble, the posterior deeper; basal impressions broad, deep, bistriate; sides with the margin distinctly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, nearly oval, finely striate; striæ entire, impunctate, the outer ones less deeply impressed, the fifth terminating in a groove; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals nearly flat. Beneath nearly black, shining. Legs varying from rufo-piceous to piceous. Length .17-.21 inch: 4.25-5.25 mm.

This species is most nearly allied to *nigrocæruleum*, *quadrifoveolatum* and *maeklini*. With the former it agrees in having the elytra nearly oval. From all it differs by its proportionally longer and

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more convex thorax, which is at most only slightly wider than long, and is more narrowed at base than in the two species last named, with the sides more distinctly sinuate behind. The form is more elongate than in any except *nigrocæruleum*.

Described by LeConte from the Saskatchewan River. It is known to me also from Alaska, Vancouver Island, British Columbia, Washington, Dunsmuir, Cal. and Nevada.

32. **B. nigrocæruleum** n. sp.—Form moderately elongate, slightly convex; color bluish black, shining. Head as wide as the thorax at apex; palpi black; antennæ about one-half as long as the body, nearly black. Prothorax less convex than in *funereum*, about one-half wider than long, slightly narrower at base than apex, finely rugose at base; apex feebly emarginate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin distinctly reflexed, arcuate in front, distinctly sinuate behind; hind angles subacute, carinate. Elytra rather more than one-half wider than the thorax, nearly oval, rather finely striate; striæ entire, impunctate, scarcely less deeply impressed at sides and tip, the fifth ending in a deep groove; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals nearly flat. Beneath black, shining. Femora black, tibiæ and tarsi piceous. Length .19-.24 inch; 4.75-6 mm.

Most nearly related to *funereum*, but sufficiently distinct by its less convex and proportionally wider thorax, with the hind angles subacute, and by the more deeply striate elytra, with the striæ scarcely finer at sides and tip, as well as by its different color. The size averages slightly larger.

The seven specimens known to me are all from Washington. For the single example in my cabinet I am indebted to Dr. Horn.

33. **B. macklini** Lec. mss.—Form moderately robust, slightly convex; color black, slightly æneous, shining, the elytra tinged with brown. Head as wide as the thorax at apex; palpi piceous; antennæ about one-half the length of the body, piceous, the first joint dark rufous. Prothorax about one-half wider than long, as wide at base as apex, rugose at base; apex nearly truncate; median line distinct, extending between the transverse impressions, which are distinct; basal impressions broad, moderately deep, bistriate; sides with the margin narrowly but distinctly reflexed, arcuate in front, oblique behind; hind angles subobtuse, but not rounded, carinate. Elytra about one-half wider than the thorax, oblong-oval, finely striate; striæ entire, impunctate, more finely impressed at sides and apex, the fifth grooved at tip; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals flat. Beneath nearly black, shining. Legs rufo-piceous. Length .18-.20 inch; 4.5-5 mm.

Broader and less elongate than *funereum*, with the thorax proportionally wider as compared with its length, the sides not sinuate

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behind and the hind angles sub-obtuse. It is slightly more convex and less broad than *quadrifoveolatum*, with the elytra less deeply striate and the dorsal punctures smaller, the legs paler, and the first joint of the antennæ rufous. The elytra are less oval than in the first-named species.

This species has not heretofore been described. The name here used was proposed by Dr. LeConte in his "List" (Smiths. Misc. Coll., 1863–6, vi, p. 14) for "*incertum* var. Mann." Mannerheim's description (Bull. Mosc., 1852, xxv, p. 301) undoubtedly applies to the species described as *incertum* by Motschulsky, and no variety is indicated by him. LeConte's type was received by him from Europe, probably from Chaudoir, and it seems to me most likely that it was sent under the name which LeConte proposed to supplant.

The only specimens known to me are in the LeConte collection. The type is probably from Alaska. The other three are from British Columbia.

34. **B. quadrifoveolatum** Mots.—Form moderately broad, feebly convex; color black, slightly æneous. Head as wide as the thorax at apex; palpi black; antennæ about one-half the length of the body, black. Prothorax about one-half wider than long, scarcely narrower at base than apex, slightly rugose at base; apex nearly truncate; median line deep, abbreviated before and behind; transverse impressions moderately distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, slightly arcuate in front, at most obsoletely sinuate behind; hind angles subrectangular, carinate. Elytra more than one-half wider than the thorax, oblong-oval, moderately deeply striate; striæ entire, impunctate, the outer less deeply impressed, the fifth slightly grooved at tip; third stria with the dorsal punctures large, the first about the middle, the second about one-fourth from apex; intervals nearly flat. Beneath black, shining. Legs black. Length .16–.21 inch; 4–5.25 mm.

This species seems most nearly related to *funereum*, but may be recognized by its broader, less convex form, proportionally wider thorax as compared with its length, with the base scarcely narrower than apex and the sides at most obsoletely sinuate behind. The elytra are less deeply striate, with the dorsal punctures larger and differently placed, and the legs are black.

As is the case with many of the species of this group, I have had but a small amount of material for study, as it seems rare in collections.

It is known to me from Alaska, Vancouver Island and Washington.

35. **B. incertum** Mots.—Form broad, moderately depressed; color varying from black or bluish black to æneous, shining. Head as wide as the thorax at

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apex; palpi black; antennæ about one-half as long as the body, black. Prothorax nearly twice as wide as long, scarcely narrower at base than apex, finely rugose at base; apex slightly emarginate: median line deep, abbreviated before and behind; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly but distinctly reflexed, arcuate from apex to base: hind angles obtuse, but not rounded, carinate. Elytra slightly wider than the thorax, oblong-ovate, finely striate; striæ entire, impunctate, the outer sometimes so fine as to appear nearly obsolete; third stria with the dorsal punctures large, the first slightly in front of the middle, the second about one-fourth from apex; intervals nearly flat. Beneath black, shining. Legs black. Length .17-.23 inch; 4.25 5.75 mm.

As above defined this species seems distinct from any of the group. After a careful study of the descriptions and of a moderate series of specimens I am convinced that *tetraglyptum* Mann. is synonymous.

It seems most closely related to *breve* Mots., from which it differs by its entire, impunctate striæ. It is also somewhat larger than that species, and is usually less bronzed. The striæ of the elytra vary considerably in depth, in some examples being so fine as to appear almost obsolete, although after careful examination they are seen to be entire, though very finely impressed. The fifth stria is grooved at tip.

It occurs as far east as Marquette, Mich., at Bayfield, Wis. (Wickham), in the Yellowstone Park, Wyo. (Bowditch), throughout the mountainous parts of Colorado, New Mexico (Snow), Nevada, and on the Pacific coast from California to Alaska. It was taken in moderate abundance by Mr. Bowditch and myself near the edge of the melting snow in the mountains southwest of Montrose, Col., at an altitude of about 10,000 feet.

36. **B. breve** Mots.—Form broad, slightly depressed; color black, usually bronzed, very shining. Head as wide as the thorax at apex; palpi black; antennæ about one-half the length of the body, black. Prothorax more than one-half wider than long, slightly narrower at base than apex, slightly rugose at base; apex slightly emarginate; median line distinct, sub-entire; transverse impressions feeble, basal impressions broad, moderately deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, oblique behind; hind angles obtuse, but not rounded, carinate. Elytra nearly one-half wider than the thorax, oblong-ovate, finely striate; striæ finely punctate, all but the first abbreviated behind, the fifth represented by a groove at apex, the seventh wanting, the sixth often nearly obsolete; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals flat. Beneath black, shining. Legs black. Length .15-.18 inch; 3.75-4.5 mm.

The species above described agrees with Motschulsky's description so far as it goes, as well as with that published by Mannerheim some years later. It therefore seems best to me to refer the specimens

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from which it was taken to *B. breve*, although of course one cannot be absolutely sure of the correctness of the identification except by a comparison with the types.

From *B. incertum* it differs by the punctate striæ of the elytra, all but the first of which are abbreviated behind, while from *nebraskense*, which agrees with it in having the elytral striæ punctured, it is distinct by its broader form, by the thorax less narrowed behind and the abbreviated striæ of the elytra.

The only specimens known to me are from the Yellowstone Park, Wyo. (Bowditch), and Nevada. It was described by Motschulsky from Sitka.

37. **B. nebraskense** Lec.—Form slightly elongate, depressed; color black, slightly æneous, shining. Head scarcely as wide as the thorax at apex; palpi black: antennæ about one-half as long as the body, black. Prothorax more than one-half wider than long, very distinctly narrower at base than apex, slightly rugose at base; apex truncate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, oblique behind, at most obsoletely sinuate in front of the hind angles, which are obtuse, but not rounded, carinate. Elytra less than one-half wider than the thorax, oblong-ovate, finely striate; striæ entire, finely punctate to behind the middle, more finely impressed at apex, the outer ones nearly effaced; third stria with the first dorsal puncture about one-third from base, the second about one-fourth from apex: intervals flat. Beneath black, shining. Legs piceous or nearly black. Length .16–.20 inch; 4–5 mm.

The thorax is more narrowed behind in this species than in any other of the group, and the elytral striæ are finely punctate. As remarked by Dr. LeConte, "it bears a strong resemblance to a *Blechrus*."

It occurs throughout a large part of the region west of the Missouri River, being known to me from Nebraska, Wyoming, Colorado, New Mexico, Utah, California, Oregon, Washington, Alberta and British Columbia.

Group viii. **transversale**.

Maxillæ with the outer lobe biarticulate. Frontal grooves single, straight, parallel; eyes moderately large and prominent. Prothorax trapezoidal, scarcely convex, the basal impressions either unistriate or feebly bistriate, with the outer stria very small. Elytra sometimes maculate, with two dorsal punctures on the third stria; humeri rounded; eighth stria not distinct from the margin.

In many respects the present group seems intermediate between the last and the next. With the former it agrees in the form of the

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thorax, but the basal impressions are at most but feebly bistriate with the outer stria very small or obsolete. The elytral markings, which occur in *transversale* and rarely in *lugubre*, recall the next group. The legs are entirely rufous or testaceous, except in *transversale*, in which the femora are rarely piceous.

The five species known to me may thus be separated:

Basal impressions of thorax with the outer stria small, but distinct.

Thorax distinctly narrower at base than apex, sides distinctly sinuate behind, hind angles rectangular; form very slender, elongate, depressed; head large, scarcely narrower than the thorax; elytra slightly wider than the thorax, subparallel, moderately deeply striato-punctate, the striæ entire; legs rufous. Length .21–.25 inch..... **grandiceps** n. sp.

Thorax very slightly narrower at base than apex.

Moderately elongate, depressed; head and thorax nigro-æneous, elytra dark brown or piceous, moderately deeply striato-punctate on the disc, less so at sides and tip, the five inner striæ entire, the sixth and seventh abbreviated behind, the latter often wanting; thorax about one-half wider than long, sides feebly sinuate behind, hind angles subrectangular; legs rufous. Length .19–.22 inch..... **guexi** Chaud.

Slightly elongate, less depressed; nearly black, usually slightly bluish or æneous; elytra less wide as compared with the thorax, striate nearly as in *guexi*, the six inner striæ entire, the seventh abbreviated behind or wanting; thorax more than one-half wider than long, sides obsoletely sinuate behind, hind angles slightly obtuse; legs rufous. Length .22–.25 inch..... **fugax** Lec.

Basal impressions of thorax with the outer stria obsolete; larger species.

Head and thorax nigro-æneous, the latter with the hind angles rectangular or sub-obtuse, sometimes obsoletely carinate: elytra testaceous with darker transverse bands, or nigro-æneous transversely banded with testaceous, more or less deeply striato-punctate, the six inner striæ entire, the seventh varying from entire to wanting; legs testaceous or nearly rufous, the femora rarely piceous. Length .24–.34 inch.. **transversale** Dej.

More elongate; bluish black, elytra rarely with the apex more or less testaceous; hind angles of thorax subacute, very finely carinate: elytra with the first and second and rarely the fifth striæ entire, the others abbreviated; legs testaceous or rufo-testaceous. Length .26–.30 inch. **lugubre** Lec.

38. **B. grandiceps** n. sp.—Form very slender, elongate, very depressed. Head and thorax piceous or nearly black, scarcely æneous; elytra usually dark brownish, with the margin and tip and sometimes the suture darker, rarely entirely piceous. Head very large, scarcely narrower than the thorax; palpi dark rufous; antennæ more than one-half the length of the body, fuscous, the first joint dark rufous. Prothorax scarcely one-half wider than long, distinctly narrower at base than apex, slightly rugose at base; apex emarginate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions broad, bistriate, the outer stria small; sides with the margin distinctly reflexed, arcuate in front, distinctly sinuate behind; hind angles rectangular,

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very finely carinate. Elytra very slightly wider than the thorax, elongate, oblong-ovate, subparallel, moderately deeply striate; striæ entire, very finely or obsoletely punctulate in front of the middle, the fifth slightly grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-fourth from apex; intervals nearly flat. Beneath piceous or nearly black, more or less shining, the ventral segments usually piceous, margined with rufous. Legs rufous. Length .21–.25 inch; 5.25–6.25 mm.

This species is distinct from the others of the group by the characters given above. It is subject to but slight variation. In some specimens the body beneath is rufo-piceous with the abdomen entirely rufous. This is, however, probably due to immaturity.

It seems most nearly related to *guexi*.

Specimens are known to me from Lowell, Mass. (Blanchard), New Jersey, Pennsylvania, the District of Columbia and Texas. Both sexes have been examined. The type is in Dr. Horn's collection.

39. **B. guexi** Chaud.—Form moderately elongate, depressed. Head and thorax nigro-æneous, often with slightly greenish lustre; elytra usually dark brown, darker at tip, rarely entirely piceous; head moderate, as wide as the thorax at apex; palpi rufous, darker towards the tip; antennæ about one-half the length of the body, dark fuscous, the basal joints rufous. Prothorax about one-half wider than long, very slightly narrower at base than apex, feebly rugose at base; apex slightly emarginate; median line distinct, abbreviated at each end; transverse impressions distinct; basal impressions broad, feebly bistriate, the outer stria small; sides with the margin distinctly reflexed, arcuate in front, feebly or obsoletely sinuate behind; hind angles sub-rectangular, obsoletely carinate. Elytra nearly one-half wider than the thorax, oblong-ovate, deeply striate on the disc, much less deeply at sides and apex; striæ finely punctate in front of the middle, the five inner entire, the sixth and seventh more or less abbreviated behind, the latter often wanting, the fifth grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-fourth from apex; intervals convex. Beneath nearly black, shining. Legs rufous. Length .19 .22 inch; 4.75–5.5 mm.

Much less slender than the preceding. The thorax is less distinctly narrower at base than apex, with the sides but feebly sinuate behind. The elytra are wider as compared with the thorax, and the five inner striæ only are entire. The elytra vary somewhat in color, being usually dark brown with the tip and often the side margins darker; the darker color sometimes also extends along the suture, and in some specimens they are entirely piceous. The head is narrower as compared with the thorax than in *grandiceps*, from which and from *fugax* it seems sufficiently distinct by the characters above given.

It is known to me from Vermont, Massachusetts, Connecticut, New Jersey, Pennsylvania, Virginia and the Lake Superior region.

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40. **B. fugax** Lec.—Form slightly elongate, scarcely depressed; color nearly black, usually with slightly æneous or bluish lustre. Head moderate, as wide as the thorax at apex; palpi rufous, darker at tip; antennæ about one-half as long as the body, piceous, the first joint rufous. Prothorax rather more than one-half wider than long, scarcely narrower at base than apex, feebly rugose at base; apex slightly emarginate; median line well marked, extending between the transverse impressions, which are distinct: basal impressions broad, bistriate, the outer stria small; sides with the margin narrowly reflexed, arcuate in front, at most only obsoletely sinuate behind; hind angles slightly obtuse, but not rounded, obsoletely carinate. Elytra less than one-half wider than the thorax, oblong-ovate, moderately deeply striate, less so at sides and apex; striæ distinctly punctate to behind the middle, the six inner entire, the seventh abbreviated behind or sometimes entirely effaced, the fifth grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-fourth from apex; intervals slightly convex. Beneath nearly black, shining, abdomen more or less piceous or rufo-piceous. Legs rufous. Length .22-.25 inch: 5.5-6.25 mm.

Closely related to the two preceding, but less depressed, with the thorax wider as compared with its length, the sides less distinctly sinuate behind, the margin rather more narrowly reflexed and the hind angles more obtuse. The elytra are less wide as compared with the thorax than in *guexi*, while the head is smaller than in *grandiceps*.

It occurs in Canada, Vermont, Massachusetts, New York, New Jersey, Pennsylvania, Ohio, Michigan and Illinois.

41. **B. transversale** Dej.—Form moderately broad, feebly convex. Head and thorax nigro-æneous, often more of less tinged with greenish; elytra very variable in color, usually either testaceous with a transverse band about the middle and often another between this and the apex varying from nigro-æneous to dusky, or nigro-æneous with a basal spot of variable size and a transverse band behind the middle testaceous, more rarely with the basal spot wanting. Head as wide as the thorax at apex; palpi rufo-testaceous, often darker at tip; antennæ not less than one-half the length of the body, piceous or fuscous, more or less testaceous at base. Prothorax distinctly wider than long, as wide or nearly as wide at base as apex, slightly rugose at base; apex emarginate; median line distinct, abbreviated before and behind, rarely extending beyond the transverse impressions, which are usually well defined, the anterior sometimes feeble; basal impressions moderately deep, the outer stria obsolete; sides with the margin distinctly reflexed, arcuate in front, more or less sinuate behind; hind angles rectangular or rarely sub-obtuse, sometimes obsoletely carinate. Elytra about one-half wider than the thorax, oblong-ovate, more or less deeply striate, more finely at sides and apex; striæ distinctly punctate to behind the middle, the six inner entire, the seventh sometimes so, sometimes abbreviated behind or even entirely effaced, the fifth grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-fourth from apex; intervals slightly convex. Beneath nearly black, shining. Legs testaceous or rufo-testaceous, the femora rarely piceous. Length .24-.34 inch; 6-8.5 mm.

A very variable species. Some of the characters most subject to variation have been indicated in the above description, but it may

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be well to enumerate some of the more important. The antennæ vary in length and in the number of pale basal joints; they are usually slightly more than one-half the length of the body and have from one to three and a half joints testaceous. The prothorax is usually as wide at base as apex, sometimes slightly narrower, and its width varies slightly as compared with its length; the sides vary from distinctly to very feebly sinuate behind, the hind angles being either rectangular or slightly obtuse, and sometimes obsoletely carinate. The elytra vary in the depth of their striæ, which are more or less distinctly, or in some cases almost crenulately punctate, the seventh stria varying from entire to obsolete; their color varies as above indicated, as does their width as compared with that of the thorax to a slight degree. Finally, the legs vary in color from entirely pale testaceous to nearly rufous, with the femora rarely piceous.

As above defined this species includes *erosum* Mots., and several other species which have from time to time been established on what then seemed good characters, but which have one by one been united either with *transversale* or *erosum*, as the characters on which they were based have become evanescent. It now seems to me that the last named species must also be suppressed, as I have been unable to find any constant characters for its separation. Those who have seen but few examples from widely separated localities may be surprised at this course, but when one comes to study, as I have done, several hundred specimens from all parts of its range, I think the necessity of its adoption will be recognized.

It is most nearly related to *B. lugubre*.

Its range of distribution is very extended. I have seen specimens from Canada, Michigan, Wisconsin, the Lake Superior region, Nebraska, Kansas, Colorado, Wyoming, Utah and from various points on the Pacific coast from Alaska to Southern California. It is known to me from as far east as the Gulf of the St. Lawrence (Henshaw).

42. **B. lugubre** Lec.—Form more slender and elongate than in *transversale*, feebly convex; color black, shining, with distinct bluish or greenish reflections rarely with the apex of the elytra more or less testaceous. Head as wide as the thorax at apex; palpi rufous, darker at tip; antennæ more than one-half as long as the body, piceous, the basal joints rufous. Prothorax distinctly wider than long, as wide at base as apex, at most very slightly rugose at base; apex feebly emarginate; median line distinct, extending between the transverse impressions, which are distinct: basal impressions deep, the outer stria obsolete; sides with the margin distinctly reflexed, arcuate to behind the middle, distinctly sinuate in front of the hind angles, which are sub-acute and very finely carinate. Elytra

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oblong-ovate, about one-half wider than the thorax, elongate, moderately deeply striate, more finely at sides and towards the apex; striæ distinctly punctate to behind the middle the first and second entire, as is also rarely the fifth, which is usually represented by a groove at tip, the others abbreviated behind; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex: intervals slightly convex. Beneath black, shining. Legs testaceous or rufo-testaceous. Length .26–.30 inch; 6.5-7.5 mm.

Closely allied to *transversale*, but more slender and elongate with the hind angles of the thorax sub-acute and the outer striæ of the elytra abbreviated behind.

It occurs in Colorado, Utah, New Mexico and California.

Group ix. ustulatum.

Maxillæ with the outer lobe bi-articulate. Frontal grooves single, straight, parallel; eyes moderately large, prominent. Prothorax subcordate or cordate, usually narrower at base than apex, with the basal impressions bistriate, the outer stria often rather small. Elytra with the humeri rounded; dorsal punctures, two in number, on the third stria; outer striæ usually more or less abbreviated behind, the eighth not distinct from the margin.

This group contains a moderately large number of species, many of which are quite difficult to define. It has been found necessary to remove four species which have usually been placed here in our lists, the dorsal punctures being situated on the third interval. They must accordingly enter the group with *ephippiger*, *morulum*, etc. The species referred to are *tigrinum*, *scintillans*, *aratum* and *dyschirinum*.

The following table, it is hoped, will aid in the separation of our species:

Thorax narrower at base than apex.....2.
Thorax as wide at base as apex.

Dark brown varying to black, scarcely æneous, elytra with an ill-defined basal spot and a submarginal one about one-fourth from apex pale, finely striato-punctate; thorax with the sides at most obsoletely sinuate behind, hind angles sub-obtuse; legs piceous or nearly black, tibiæ and tarsi sometimes rufo-piceous. Length .18–.23 inch.....**nevadense** Ulke.

Black, slightly æneous, elytra with a submarginal spot near the apex or the entire apex pale, moderately deeply striato-punctate; thorax with the sides distinctly sinuate behind, hind angles rectangular; legs usually rufous, with the femora darker. Length .17–.21 inch.

consanguineum n. sp.

2. Elytra either immaculate or with a pale submarginal spot near the apex....1.
Elytra each with a well-defined basal and another subapical spot pale; legs rufo-testaceous..... 3.

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Elytra very pale testaceous, narrowly rufous along the suture to behind the middle where there is a large rufous spot often connected with the margin by a narrow transverse line; head and thorax nigro-æneous; elytra finely striato-punctate, the five inner striæ entire; legs testaceous, the femora sometimes darker. Length .17–.20 inch....**fuscicrum** Mots.

3. Thorax slightly narrower at base than apex, sides moderately arcuate in front, sinuate behind, hind angles rectangular; elytra moderately finely striato-punctate, intervals nearly flat; color usually more or less tinged with brownish. Length .18–.26 inch.....**lucidum** Lec.

Thorax distinctly narrower at base than apex, sides strongly arcuate in front, deeply sinuate behind, hind angles rectangular; elytra moderately deeply striato-punctate, intervals convex; color darker and more metallic; form more convex. Length .21–.25 inch.....**ustulatum** Linn.

4. Thorax wider than long.....5.

Thorax as long as wide; nigro-æneous, elytra often brownish at base with a submarginal pale spot about one-third from apex, which is rarely wanting, the first and second striæ only entire, the fifth represented by a groove at tip; legs rufo-testaceous. Length .16–.20 inch.
scopulinum Kirby.

5. Head small, narrower than the thorax at apex; elytra with a submarginal pale spot near the apex, which is rarely wanting.....6.

Head as wide as the thorax at apex.....7.

6. Elongate, convex; elytra finely striato-punctate, the striæ not dilated, intervals feebly convex; antennæ piceous, the first joint rufous; legs rufous, the femora usually darker. Length .24–.30 inch.
bimaculatum Kirby.

More convex; thorax more narrowed behind; elytra deeply striato-punctate, the striæ dilated on the disc, much finer at sides and tip; antennæ fuscous, the basal joints paler, legs pale yellowish testaceous. Length .24–.28 inch.....**postremum** Say.

7. Elytra with the first and second striæ entire, the fifth either entire or represented by a groove at tip.....8.

Elytra with the first stria only entire, the fifth represented by a groove at tip.9.

Elytra with all the striæ entire; viridi-æneous, the elytra without submarginal pale spot, moderately deeply striato-punctate, more finely at sides and tip; legs rufous. Length .22–.24 inch.....**canadense** n. sp.

Elytra with the five inner striæ entire; nigro-æneous, the elytra usually with a submarginal pale spot near the apex, moderately finely striato-punctate; legs testaceous or rufous, the femora sometimes darker. Length .20–.25 inch.....**striola** Lec.

8. Hind angles of thorax sub-acute; elytra without submarginal pale spot.

Dilated, slightly convex; black, strongly tinged with blue; thorax about one-half wider than long; legs rufo-piceous, the femora darker. Length .24–.27 inch.....**platynoides** n. sp.

Slender, elongate, moderately convex; piceous or nearly black, scarcely æneous, thorax slightly wider than long; legs rufo-testaceous. Length .22–.25 inch.....**subangustatum** n. sp.

Hind angles of thorax obtuse, but not rounded; rather slender, elongate; color varying from brownish to black, slightly æneous, the elytra without submarginal pale spot, rather deeply striato-punctate; thorax with the sides

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feebly sinuate in front of the hind angles; legs rufous. Length .23-.28 inch.....**texanum** Chd.

Hind angles of thorax rectangular.

Moderately robust: black, usually slightly æneous or bluish, the elytra rarely with a submarginal pale spot, rather deeply striato-punctate; sides of thorax distinctly sinuate behind; legs rufous. Length .20-.24 inch.
picipes Kirby.

Elongate, slightly convex; black, slightly æneous, elytra without submarginal pale spot, finely striate, striæ distinctly punctate; legs black or dark piceous. Length .16-.18 inch.....**grapii** Gyll.

9. Slender, elongate, convex; æneous or nigro-æneous, elytra without submarginal pale spot, finely striate, the striæ deeply not closely punctate; hind angles of thorax rectangular; legs testaceous. Length .14-.17 inch.
californicum n. sp.

43. **B. nevadense** Ulke.—Form rather broad, moderately convex; color varying from dark brown to nearly black, slightly æneous, shining, the elytra usually with an ill-defined basal spot and another submarginal one about one-fourth from apex pale, the latter sometimes extending slightly transversely towards the suture. Head as wide as the thorax at apex: palpi piceous; antennæ scarcely one-half as long as the body, piceous, the first joint more or less rufous. Prothorax subcordate, rather more than one-half wider than long, as wide at base as apex, slightly rugose at base; apex nearly truncate; median line distinct, abbreviated before and behind; transverse impressions rather feeble; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, oblique, not or at most obliquely sinuate behind; hind angles slightly obtuse, but not rounded, carinate. Elytra less than one-half wider than the thorax, oblong-ovate, finely striate, very finely at sides and tip; striæ finely but distinctly punctate to behind the middle, the five inner entire, the fifth slightly grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-fourth from apex; intervals nearly flat. Legs varying from dark rufous to piceous, the femora usually darker. Length .18-.23 inch; 4.5-5.75 mm.

This species resembles the next quite closely. From *consanguineum*, however, it may be recognized by the thorax with the sides not at all or at most obsoletely sinuate behind, and the more finely striate elytra with usually an ill-defined basal spot. From *striola*, with which it is sometimes confused, it seems abundantly distinct by the characters given above.

It occurs in Nevada, California and Oregon.

44. **B. consanguineum** n. sp.—Form slightly robust, moderately convex; color black, more or less æneous, shining, the elytra with a submarginal spot about one-fourth from apex, extending more or less transversely towards the suture, or sometimes the entire apex pale. Head as wide as the thorax at apex; palpi piceous; antennæ about one-half the length of the body, piceous, the first joint usually paler. Prothorax subcordate, about one-half wider than long, as wide at base as apex, scarcely rugose at base: apex nearly truncate; median line distinct, abbreviated in front and sometimes also behind; transverse impressions

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distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, distinctly sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately deeply striate, very finely towards the tip: striæ deeply punctate to behind the middle, the five inner entire; third stria with the first dorsal puncture about one-third from base, the second about one-fourth from apex; intervals feebly convex. Beneath black, shining. Legs variable in color, usually with the femora piceous and the tibiæ and tarsi rufous, sometimes entirely rufous or entirely piceous. Length .17-.21 inch; 4.25-5.25 mm.

Closely allied to *striola*, but less elongate, with the thorax slightly wider as compared with its length, and as wide at base as apex. From *nevadense*, on the other hand, it differs by its more deeply striate elytra without basal spot, and by the sides of the thorax distinctly sinuate behind and the hind angles rectangular.

Specimens are labeled *mexicanum* in some collections. I find, however, after studying specimens of that species in the Museum of Comparative Zoölogy at Cambridge, received from Bates, that the last named species is very closely allied to *transversale*, and is very distinct from the present species.

It is known to me from California, Arizona, Utah, Colorado and Guadaloupe Island.

45. **B. canadense** n. sp.—Form elongate, convex; color nigro-æneous, distinctly tinged with greenish, shining. Head large, as wide as the thorax at apex; palpi dark rufous; antennæ about one-half as long as the body, piceous, the basal joints rufous. Prothorax subcordate, less than one-half wider than long, narrower at base than apex, sparsely punctate at base; apex nearly truncate; median line deep, abbreviated in front; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, strongly arcuate in front, deeply sinuate behind; hind angles prominent, subacute, strongly carinate. Elytra about one-half wider than the thorax, oblong-oval, deeply striate, more finely at sides and tip; striæ entire, distinctly punctate nearly to apex, the fifth grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals convex. Beneath black, shining. Legs rufous. Length .22-.24 inch; 5.5-6 mm.

A very pretty species. It differs from the others of the group in having all the striæ of the elytra entire. It resembles most closely *B. striola*.

Described from two females collected near Ottawa, Canada, by Mr. W. H. Harrington, to whom I am indebted for the single example in my cabinet. Mr. Harrington writes me that they were taken on the shore of the river, at high water, among some stones near the water's edge on May 24, 1891.

46. **B. striola** Lec.—Form slender, elongate, moderately convex; color nearly black, more or less æneous, or more rarely bluish or greenish, shining, the

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elytra often somewhat brownish with a submarginal pale spot about one-fourth from apex, which extends more or less transversely towards the suture. Head as wide as the thorax at apex; palpi testaceous, darker towards the tip; antennæ about one-half the length of the body, piceous, the first and usually the second and third joints testaceous. Prothorax scarcely one-half wider than long, slightly narrower at base than apex, more or less punctulate at base; apex slightly emarginate; median line distinct, abbreviated in front; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-oval, moderately finely striate, much more finely at sides and apex: striæ distinctly punctate, the punctures becoming obsolete towards the tip, the five inner entire; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals scarcely convex. Beneath black, shining. Legs varying from yellowish testaceous to rufous, sometimes with the femora piceous. Length .20–.25 inch; 5–6.25 mm.

This species is subject to some variation. The submarginal spot of the elytra usually extends slightly transversely towards the suture, forming in some specimens almost a transverse band; rarely, however, it is entirely wanting. The legs in typical examples are yellowish testaceous. They vary, however, to rufous, and the femora are sometimes more or less piceous. Such specimens closely resemble *consanguineum*, and can be separated only by their more elongate form, with the thorax slightly narrower at base than apex.

It occurs along the Pacific coast from British Columbia to California, extending eastward to the Rocky Mountains.

47. **B. platynoides** n. sp.—Larger and less convex than *B. striola*, form more dilated; color black, strongly tinged with blue, shining. Head as wide as the thorax at apex; palpi piceous or rufo-piceous; antennæ about one-half the length of the body, piceous, the basal joints slightly rufous. Prothorax about one-half wider than long, slightly narrower at base than apex, slightly rugose at base; apex nearly truncate; median line distinct, abbreviated in front; transverse impressions moderately distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, arcuate to behind the middle, strongly sinuate in front of the hind angles, which are sub-acute and carinate. Elytra about one-half wider than the thorax, oblong-oval, striate; striæ distinctly punctate to behind the middle, the inner ones moderately deep, the outer ones much finer, the first and second only entire, the fifth represented by a groove at tip; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals feebly convex, the outer ones nearly flat. Legs piceous or rufo-piceous, the femora darker. Length .24–.27 inch; 6–6.75 mm.

Most nearly related to *striola*, from which it differs by its larger size, more dilated and slightly less convex form, with the thorax slightly more narrowed behind and the hind angles sub-acute. The elytra are more oval, without trace of the submarginal spot which

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is usually present in that species, and with the first and second striæ only entire. It differs also in color and has a rather different facies, recalling, at first sight, certain species of *Platynus*.

The males are slightly more slender than the females.

About a dozen specimens have been examined, all from California. The above description was taken from two examples in Dr. Horn's collection from the headwaters of the Kern River, and two from Pomona, sent to me by Mr. H. C. Fall, to whom I am indebted for the single specimen in my cabinet.

48. **B. bimaculatum** Kirby.—Form elongate, very convex; color nearly black, slightly æneous, the elytra often more or less brownish, usually with a pale submarginal spot about one-fourth from apex, which often extends very obliquely towards the suture. Head small, narrower than the thorax at apex; palpi rufous or rufo-piceous; antennæ scarcely one-half as long as the body, piceous, the first joint rufous. Prothorax very convex, depressed at base, about one-half wider than long, distinctly narrower at base than apex, rugose at base; apex slightly emarginate; median line distinct, abbreviated before and behind; transverse impressions distinct, the anterior angulate; basal impressions small, deep, bistriate; sides with the margin narrowly reflexed, strongly arcuate, suddenly constricted and sinuate behind; hind angles rectangular, carinate. Elytra less than one-half wider than the thorax, oblong-oval, rather finely striate, very finely at the sides and towards the tip; striæ distinctly punctate to behind the middle, the five inner entire, the fifth grooved at apex; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals feebly convex, the outer ones nearly flat. Legs rufous, the femora usually slightly darker. Length .24-.30 inch; 6-7.5 mm.

An easily recognized species.

It is essentially Northern in its distribution, extending across the continent from the Atlantic to the Pacific It occurs in Canada, the Hudson Bay Territory, Manitoba, Alberta, Wyoming, Colorado and the Rocky Mountains, Nevada, Washington and British Columbia.

49. **B. postremum** Say.—Moderately elongate, very convex. Head and thorax nigro-æneous, shining, the elytra brownish æneous with a large, oblique submarginal spot about one-third from apex. Head rather small, narrower than the thorax at apex; palpi pale yellowish testaceous; antennæ rather more than one-half the length of the body, fuscous, the basal joints paler. Prothorax about one-half wider than long, distinctly narrower at base than apex, punctate at base; apex nearly truncate; median line distinct, abbreviated in front; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, strongly arcuate in front, suddenly constricted and sinuate behind; hind angles rectangular, carinate. Elytra slightly wider than the thorax, oblong-oval, deeply striate; striæ strongly punctate to behind the middle, dilated on the disc, less deeply impressed at the sides and very fine, nearly effaced, towards the apex, the fifth slightly grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; in-

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tervals convex. Beneath brownish or piceous, shining. Legs pale yellowish testaceous. Length .24-.28 inch; 6-7 mm.

One of the best marked species of the group. The submarginal spot on the elytra extends very obliquely towards the suture, in some specimens being so dilated as to extend over the entire apex. In one example that I have seen, which seems referable to this species, it is entirely wanting. The five inner striæ of the elytra are entire, although so extremely fine at tip in some specimens as to be very difficult to trace.

It appears to be most nearly related to *bimaculatum*, but is more convex, with the thorax more narrowed behind, and the striæ of the elytra deeper and dilated at base. It differs also in the color of the legs, antennæ and palpi.

It is extremely local. I have seen specimens only from Lowell, Mass. (Blanchard), New York, Pennsylvania and Illinois. According to Dr. Hamilton it is abundant at Allegheny, Pa.

50. **B. ustulatum** Linn.—Form slightly elongate, convex; color greenish black, shining, the elytra with a well-defined pale spot at base, originating on the humerus, and another submarginal one about one-third from apex, extending slightly obliquely towards the suture. Head as wide as the thorax at apex; palpi rufous, slightly darker at tip; antennæ about one-half the length of the body, fuscous, the basal joints rufous. Prothorax nearly one-half wider than long, narrower at base than apex, sparsely punctate at base; apex slightly emarginate; median line distinct, abbreviated in front and sometimes also behind; transverse impressions distinct; basal impressions small, deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, suddenly constricted and sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-oval, moderately deeply striate, less deeply at sides and apex, the five inner striæ entire, the fifth grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals convex. Beneath black, shining. Legs rufo-testaceous. Length .21-.25 inch; 5.25-6.25 mm.

Easily recognizable by its markings from all except *lucidum*. From this latter species it may be distinguished by its more convex form, with the thorax proportionally narrower at base than apex, and with the sides more strongly arcuate in front and more deeply sinuate behind. The elytra are more deeply striate with the striæ more deeply punctured and the intervals more convex.

It is very widely distributed, occurring locally throughout the greater part of the region east of the Rocky Mountains, and also in Europe and western Siberia.

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51. **B. lucidum** Lec.

This species resembles *ustulatum* so closely as to require no special description. It differs by its less convex form, with the prothorax less suddenly and less strongly narrowed behind and the elytra more finely striato-punctate, with the intervals flat or nearly so. The sides of the thorax are less strongly arcuate in front and less deeply sinuate behind. The color is usually more brownish than that seen in the preceding species and the spots on the elytra are usually larger and paler, especially the posterior, which are often nearly white and are not infrequently united at the suture. The size varies from .18–.26 inch; 4.5–6.5 mm.

It occurs in the Hudson Bay Territory, the Lake Superior region, Manitoba, Minnesota, Nebraska, the Rocky Mountain region and westward to the Pacific coast.

52. **B. fuscicrum** Mots.—Form slender, depressed. Head and thorax æneous or nigro-æneous, the elytra very pale testaceous with a narrow rufous or rufo-piceous line extending along the suture to behind the middle, where it ends in a sub-pentagonal spot of the same color, which is often connected with the margin each side by a fine transverse line. Head scarcely as wide as the thorax at apex; palpi more or less rufous, darker towards the tip; antennæ about one-half as long as the body, fuscous, the basal joints paler. Prothorax nearly one-half wider than long, narrower at base than apex, slightly rugose at base; apex nearly truncate; median line distinct, abbreviated in front; transverse impressions moderately distinct; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles subrect-angular, finely carinate. Elytra about one-half wider than the thorax, oblong-ovate, finely striate, more finely towards the sides and apex; striæ finely punctate, obsoletely so towards the tip, the five inner entire, the fifth grooved at apex; third stria with the first dorsal puncture in front of the middle, the second about one-fourth from tip; intervals flat. Beneath black, shining. Legs rufo-testaceous, the femora often darker. Length .17–.20 inch; 4.25–5 mm.

A very pretty little species. It seems most closely related to *lucidum*, but is distinct by its more depressed form, with the thorax more narrowed behind, and the elytra more finely striate, as well as by its peculiar markings and smaller size.

The above name has several years priority over that of *mixtum*, suggested for it by Dr. LeConte (List Col. N. Am., 1863, p. 14).

The specimens in the LeConte collection are from Alaska. It occurs also locally throughout the Rocky Mountain region. It was taken in moderate abundance by Mr. Bowditch and myself at Gunnison, Col., and in the San Luis Valley, and I have received it from Salida, in the same State, from Mr. H. F. Wickham. It is also known to me from Manitoba, Montana, Wyoming, Utah and Oregon (Henshaw).

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53. **B. scopulinum** Kirby.—Form slender, elongate, convex. Head and thorax nigro-æneous, the elytra æneo-piceous, usually more or less brownish towards the base, with a large submarginal pale spot about one-third from apex, which is very rarely wanting. Head as wide as the thorax at apex; palpi rufous, darker towards the tip; antennæ more than one-half the length of the body, piceous, the basal joints rufous. Prothorax as long as wide, distinctly narrower at base than apex, scarcely punctulate at base; apex truncate; median line distinct, abbreviated in front; transverse impressions distinct; basal impressions deep, bistriate; sides with the margin very narrowly reflexed, strongly arcuate in front, distinctly sinuate behind; hind angles rectangular or slightly sub-acute, finely carinate. Elytra about one-half wider than the thorax, widest slightly behind the middle, oblong-ovate, moderately finely striate; striæ distinctly punctate to behind the middle, the first and second entire, the fifth represented by a groove at tip; third stria with the first dorsal puncture rather more than one-third from base, the second about one-fourth from apex; intervals feebly convex. Beneath black, shining. Legs rufo-testaceous. Length .16-.20 inch; 4-5 mm.

A very pretty and well-marked species, abundantly distinct from the others of the group by the characters given above. It was described by LeConte under the name of *gelidum* (Ann. Lyc., iv, 1848, p. 464), *scopulinum* Kirby being then regarded by him as a synonym of *prostremum* Say.

It occurs throughout the more northern portions of the region east of the Rocky Mountains, being known to me from Labrador and the Gulf of the St. Lawrence (Henshaw), Canada, New Hampshire, Vermont, Connecticut, New York, Michigan and the Lake Superior region, Manitoba, Wisconsin and Colorado.

54. **B. picipes** Kirby.—Less slender than *scopulinum*, moderately convex; color black, shining, sometimes slightly æneous or bluish, the elytra usually immaculate, rarely with a submarginal pale spot about one-fourth from apex. Head as wide as the thorax at apex; palpi rufous; antennæ more than one-half as long as the body, piceous or fuscous, the basal joints rufous. Prothorax about one-half wider than long, narrower at base than apex, more or less rugose at base; apex feebly emarginate; median line fine, usually abbreviated in front; transverse impressions distinct; basal impressions deep, bistriate; sides with the margin narrowly reflexed, moderately strongly arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-oval, rather deeply striate; striæ coarsely and deeply punctate to behind the middle, the first and second only entire, the fifth represented at apex by a groove; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals moderately convex. Beneath nearly black, shining. Legs rufous. Length .20-.24 inch; 5-6 mm.

Quite distinct by the characters above given. Specimens with a submarginal pale spot (*plagiatum* Zimm.) bear some resemblance to *scopulinum*, but may be readily distinguished by the proportionally wider thorax and less convex and broader form.

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B. militare Casey is undoubtedly synonymous with this species.

It is known to me from Maine, Massachusetts, New York, Pennsylvania, the Lake Superior region, Minnesota, Missouri, Kansas and Texas.

55. **B. texanum** Chaud.—Form rather slender, elongate, moderately convex: color varying from brownish to black, slightly æneous, shining. Head as wide as the thorax at apex; palpi rufous; antennæ about one-half the length of the body, fuscous, the basal joints rufous. Prothorax about one-half wider than long, slightly narrower at base than apex; apex nearly truncate; median line fine, extending between the transverse impressions, which are feebly marked, the anterior nearly obsolete; basal impressions small, deep, rather feebly bistriate; sides with the margin narrowly reflexed, moderately arcuate in front, slightly sinuate in front of the hind angles, which are obtuse, but not rounded, carinate. Elytra scarcely one-half wider than the thorax, elongate, oblong-ovate, moderately deeply striate, much more finely towards the tip; striæ distinctly punctate to behind the middle, the two inner only entire, the fifth represented by a groove at apex; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals slightly convex. Beneath varying from brownish to black, shining. Legs rufous. Length .23–.28 inch; 5.75–7 mm.

Closely allied to the preceding, but larger and more elongate. The thorax is less narrowed behind, with the sides less strongly arcuate in front, and but slightly sinuate in front of the hind angles, which are obtuse, but not rounded. The elytra are less oval and more elongate.

It is known to me from Texas, the Indian Territory, Missouri and Iowa City, Iowa (Wickham).

56. **B. subangustatum** n. sp.—Form slender, elongate, convex; color piceous or nearly black, sometimes very slightly æneous, shining. Head as wide as the thorax at apex; palpi dark rufous; antennæ about one-half the length of the body, fuscous, the basal joints paler. Prothorax slightly wider than long, slightly narrower at base than apex; apex nearly truncate; median line fine, usually abbreviated at each end; transverse impressions distinct; basal impressions small, deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, sinuate behind; hind angles moderately prominent, acute, carinate. Elytra less than one-half wider than the thorax, oblong-ovate, deeply striate; striæ less deep at the sides and towards the tip, distinctly punctate to behind the middle, the two inner only entire, the fifth represented by a groove at tip; third stria with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex; intervals slightly convex. Beneath nearly black (rufopiceous in some specimens, probably from immaturity), shining. Legs rufous. Length .22–.25 inch; 5.5–6.25 mm.

This species is most nearly related to *texanum*, from which it differs by its smaller size, more slender form and proportionally longer thorax, the sides of which are more distinctly sinuate behind and the hind angles acute and slightly prominent.

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Described from about a dozen specimens from New Mexico and Arizona.

57. **B. grapii** Gyll.—Form elongate, slightly convex; color black, slightly æneous, shining. Head as wide as the thorax at apex; palpi black; antennæ more than one-half as long as the body, black, the first joint sometimes more or less rufous. Prothorax about one-half wider than long, narrower at base than apex, slightly rugose at base: apex feebly emarginate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions deep, bistriate: sides with the margin very narrowly reflexed, strongly arcuate in front, deeply sinuate behind; hind angles rectangular, carinate. Elytra nearly one-half wider than the thorax, oblong-oval, finely striate; striæ distinctly punctate to behind the middle, the first, second, and often the fifth entire, the latter either grooved or represented by a groove at apex, the others more or less abbreviated behind; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals nearly flat. Beneath black, shining. Legs black, the tibiæ beneath and the tarsi sometimes paler (probably from immaturity). Length .16-.18 inch; 4-4.5 mm.

Distinct from any other species in our fauna. It is subject to slight variation. Specimens from Nevada and the extreme West have the striæ deeper and less abbreviated behind, the fifth deeper and usually entire, and the thorax with the sides rather less deeply sinuate behind than in eastern examples. The two forms, however, intergrade.

It occurs in northern Europe, in Greenland, and on this continent in the Hudson Bay Territory and the more northern portions, extending southward along the Sierras to Nevada, along the Rocky Mountains to Colorado and New Mexico, while in the East it occurs abundantly in the White Mountains of New Hampshire.

58. **B. californicum** n. sp.—Form slender, elongate, convex; color æneous, or nigro-æneous, very shining. Head as wide as the thorax at apex; palpi rufous, darker towards the tip; antennæ about one-half the length of the body, fuscous, the basal joints testaceous. Prothorax slightly wider than long, distinctly narrower at base than apex; apex truncate; median line fine, abbreviated in front; transverse impressions distinct, the posterior deeper; basal impressions deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, finely carinate. Elytra about one-half wider than the thorax, oblong-oval, finely striate; striæ deeply, not closely punctate, the first only entire, the fifth represented by a groove at tip; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals nearly flat. Beneath nearly black, shining. Legs testaceous. Length .14-.17 inch; 3.5-4.25 mm.

A very pretty little species, which bears a strong superficial resemblance to *semistriatum*. It differs, however, in the arrangement and number of the dorsal punctures, which in the latter species are

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placed in irregular rows on the elytral intervals. At first sight it also recalls *dyschirinum*.

It occurs in California. Specimens have been received from Pomona and Palm Springs (Fall), Santa Ana Canon (Wickham), and Sylvania and Santa Rosa (Ricksecker).

Group x. rickseckeri.

To this group I have referred a single species which differs essentially from any known to me by the presence of three dorsal punctures on the third stria. The eyes are moderately large and prominent, the frontal grooves single and parallel. The thorax is cordate, very distinctly narrower at base than apex.

The number of dorsal punctures is repeated in *scudderi* and its allies, but in the latter group they are placed on the third interval.

59. **B. rickseckeri** n. sp.—Form slender, elongate, depressed, shining. Head and thorax very dark brown, the elytra reddish brown, sometimes darker at apex. Head as wide as the thorax at apex; palpi rufous; antennæ about one-half the length of the body, fuscous. Prothorax cordate, slightly wider than long, very distinctly narrower at base than apex, rugose at base; apex nearly truncate; median line distinct, abbreviated before and behind; transverse impressions distinct, the posterior deeper; basal impressions deep, unistriate; sides with the margin very narrowly reflexed, strongly arcuate in front, deeply sinuate behind; hind angles prominent, acute, very finely carinate. Elytra distinctly wider than the thorax, elongate, oblong-ovate, moderately deeply striate, more finely at the sides and towards the tip; striæ distinctly punctate to behind the middle, the first entire, the fifth either entire, or represented by a groove at tip, the seventh wanting; third stria with the first dorsal puncture about one-fourth from base, the second slightly behind the middle, the third about one-fifth from apex; intervals feebly convex. Beneath dark brown, shining. Legs rufous. Length .13-.15 inch; 3.25-3.75 mm.

A very distinct and curious little species.

In the LeConte collection there are two specimens, one of which is labeled "*Perileptus?*" I have compared this species with Schaum's description of that genus, as well as with specimens of *P. areolatus* from Gibralter, and there can be no doubt but that it is a *Bembidium*.

Under his description of *Perileptus*, of which *P. areolatus* is the type, Schaum refers the genus to the Trechini. The correctness of this position I am inclined to doubt, the last joint of the palpi, although longer as compared with the penultimate than in any species of *Bembidium* known to me, being subulate. Owing to the small number of specimens of *Perileptus* at my disposal, however, I have been unable to examine the mesosternal epimera. Should they prove to be wide, as in the Bembidiini, the genus should be placed in the

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latter tribe. *P. areolatus* bears a strong resemblance to certain species of *Tachys*. For an opportunity of studying it I am indebted to Dr. Horn.

Eight specimens of *B. rickseckeri* have been examined. For the examples in my cabinet I am indebted to Mr. L. E. Ricksecker, to whom it gives me pleasure to dedicate the species, and to Mr. Chas. Liebeck.

It occurs on the Pacific coast, being known to me from California, Oregon and Washington.

Group xi. scudderi.

Maxillæ with the outer lobe bi-articulate. Frontal grooves single, straight, parallel; eyes moderately large and prominent. Elytra with the humeri rounded, the striæ entire; third interval with three dorsal punctures.

The species of this group may be at once distinguished from all the others in which the dorsal punctures are on the third interval by having the abnormal number of three punctures, a character repeated only in *rickseckeri*, in which, however, they are situated on the third stria.

The group is, so far as I am aware, peculiar to America, and is confined to that portion of our country lying west of the Mississippi River and to Mexico. Three out of the four species occurring in the region treated in this paper have been found in the Salt Lake Valley, Utah (*scudderi*, *henshawi* and *consimile*). Of these the first two are also known to me from the Pacific coast, while the last named extends as far east as Nebraska. The fourth (*hageni*) was described by Dr. LeConte, under the name *sexpunctatum*, from the valley of the Colorado River, and the unique in his collection is the only specimen known. Two Mexican species, *flohri* Bates and *placitum* Bates,* are apparently referable to this group, and from the descriptions seem to be distinct from any of our species, which may thus be separated:

* For descriptions the student is referred to Proc. Zool. Soc., 1878, p. 602, and Biol. Cent. Am., vol. i, pt. 1, October, 1882, pp. 150-151. The former is from the vicinity of the City of Mexico and Oaxaca; the latter from near the City of Mexico. Both were described in the first paper under the generic name *Notaphus*.

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Head and thorax nigro-æneous; elytra with well-defined dark markings.

Very slender, elongate; thorax with the sides arcuate in front, sinuate behind, hind angles rectangular; elytra subparallel, pale testaceous with a small black spot on the third interval about one-fourth from base, a larger, semicircular one slightly behind the middle and a smaller one between this and the apex; legs testaceous. Length .18–.21 inch.
henshawi n. sp.

Broader, less elongate; thorax with the sides oblique behind, hind angles obtuse; elytra with the scutellar region, a small spot on the third interval one-fourth from base, a transverse band behind the middle, the apex and a narrow line along the suture nearly black; legs rufo-piceous, the femora usually darker. Length .18–.23 inch..... **consimile** n. sp.

Elytra without well-defined markings.

Moderately elongate; black, scarcely æneous, the elytra sometimes piceous, rarely with traces of paler markings; thorax with the sides arcuate nearly to base, sinuate in front of the hind angles, which are rectangular; legs piceous. Length .21–.26 inch..... **scudderi** Lec.

More elongate: head and thorax æneo-piceous, the elytra dark reddish brown, subparallel; thorax with the sides arcuate, hind angles obtuse; legs rufo-testaceous. Length .22 inch..(*sexpunctatum* || Lec.).. **hageni** Nobis.

60. **B. henshawi** n. sp.—Form slender, elongate, depressed. Head and thorax nigro-æneous, shining; elytra pale testaceous with a small black spot on the third interval about one-fourth from base, a large transverse semicircular one slightly behind the middle and a smaller one between this and the apex. Head as wide as the thorax at apex; palpi rufous, piceous at tip; antennæ less than one-half as long as the body, fuscous, the basal joints paler. Prothorax subcordate, about one-half wider than long, narrower at base than apex, rugose at base; apex nearly truncate; median line distinct, slightly abbreviated before and behind; transverse impressions distinct; basal impressions broad, moderately deep, bistriate; sides with the margin narrowly, but distinctly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra elongate, oblong-ovate, very slightly wider than the thorax, nearly parallel, moderately finely striate; striæ entire, finely punctate to behind the middle, the fifth slightly grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-fourth from base, the second slightly behind the middle, the third about one-fifth from apex. Beneath black, slightly tinged with green, shining. Legs testaceous or rufo-testaceous, the femora and coxæ sometimes darker. Length .18–.21 inch; 4.5–5.25 mm.

One of our prettiest species of *Bembidium*. It is the smallest and most slender species of the group, easily recognizable from the others and apparently subject to but slight variation.

The males are much more abundant than the females, of the seventeen specimens examined but three being of the latter sex.

I take great pleasure in dedicating it to Mr. Samuel Henshaw of Cambridge, to whom I am much indebted for assistance in many ways.

It is known to me from Sherman, Wyo. (Garman), Salt Lake,

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Utah, and Tehachapi, Cal. (Wickham), most of the specimens examined, however, being from Salt Lake.

61. **B. consimile** n. sp.—Form slightly elongate, depressed. Head and thorax nigro-æneous; elytra dark testaceous with the scutellar region, a small quadrate spot on the third interval about one-fourth from base, a transverse band behind the middle, the apex and a narrow line along the suture nearly black. Head slightly narrower than the thorax at apex; palpi rufo-piceous; antennæ scarcely one-half the length of the body, dark fuscous. Prothorax subcordate, about one-half wider than long, narrower at base than apex, scarcely rugose at base; apex nearly truncate; median line distinct, sub-entire; transverse impressions feeble, the anterior nearly obsolete; basal impressions broad, moderately deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, oblique, not sinuate behind; hind angles obtuse, finely carinate. Elytra slightly wider than the thorax, oblong-ovate, moderately finely striate; striæ finely punctate to behind the middle, entire, the fifth slightly grooved at apex; intervals flat, the third with the first dorsal puncture about one-fourth from base, the second slightly behind the middle, the third about one-fifth from apex. Beneath nearly black, shining, the last ventral segment usually dark rufous. Legs rufo-piceous, the femora slightly darker. Length .18–.23 inch; 4.5–5.75 mm.

Closely related to *scudderi*, but broader, with the sides of the thorax oblique behind, without trace of sinuation, and the hind angles obtuse. The elytra are also less elongate and of different color. It approaches *henshawi* by the maculate elytra, but the markings are broader and connected along the suture, and the ground-color is darker. It differs also by its much less slender form, and by the sides of the thorax not sinuate behind and the hind angles obtuse.

Since the above description was written I have received a specimen in which the entire apical half of the elytra is black.

About a dozen examples, including specimens of both sexes, are known to me. Of these five are from Nebraska (three from Lincoln), two from Salt Lake, Utah, and five from Colorado Springs, Colo. (Wickham).

62. **B. scudderi** Lec.—Form elongate, depressed; color black, scarcely æneous, shining, the elytra sometimes piceous, rarely with traces of paler markings. Head as wide as the thorax at apex; palpi piceous; antennæ less than one-half as long as the body, piceous. Prothorax subcordate, about one-half wider than long, narrower at base than apex, slightly rugose at base; apex feebly emarginate; median line distinct, sub-entire; anterior transverse impression nearly obsolete, the posterior distinct; basal impressions broad, bistriate; sides with the margin narrowly reflexed, arcuate nearly to base, sinuate for a short distance in front of the hind angles, which are rectangular and finely carinate. Elytra very slightly wider than the thorax, elongate, oblong-ovate, subparallel, finely striate; striæ entire, finely punctate to behind the middle, the fifth slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-fourth from base, the second about the middle, the third about one-fourth from apex. Beneath black, shining. Legs piceous. Length .21–.26 inch; 5.25–6.5 mm.

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Closely allied to *hageni* (*sexpunctatum* || Lec.) on the one hand and *consimile* on the other, but sufficiently distinct by the characters given above. Specimens rarely occur with traces of a post-humeral spot and of a transverse band behind the middle dark rufous; indications, however, point to these being more or less immature.

Its range of distribution is nearly the same as that of *henshawi*. It is known to me from the Yellowstone Park, Wyo. (Bowditch), the vicinity of Salt Lake, Utah, Nevada and Tehachapi, Cal. (Wickham).

63. **B. hageni** Nobis.—Form elongate, depressed. Head and thorax æneo-piceous, shining: elytra dark reddish brown, feebly æneous. Head as wide as the thorax at apex; palpi rufo-piceous; antennæ nearly one-half as long as the body, dark rufo-piceous. Prothorax subcordate, less than one-half wider than long, slightly narrower at base than apex, slightly rugose at base; apex nearly truncate; median line fine, abbreviated before and behind: anterior transverse impression nearly obsolete, the posterior rather feeble; basal impressions broad, rather shallow, feebly bistriate; sides with the margin narrowly reflexed, arcuate; hind angles obtuse, but not rounded, finely carinate. Elytra scarcely wider than the thorax, elongate, oblong-ovate, nearly parallel, moderately deeply striate; striæ entire, distinctly punctate to behind the middle, the fifth slightly grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-fourth from base, the second about the middle, the third about one-fourth from apex. Beneath reddish brown. Legs rufo-testaceous. Length .22 inch; 5.5 mm.

It most nearly resembles *scudderi*, but is more elongate, with the thorax less narrowed at base, the sides not sinuate behind and the hind angles obtuse. The elytra are scarcely wider than the thorax, nearly parallel, rather more deeply striate and of different color, as are also the legs and antennæ. It is distinct from the other species of the group by the characters given above.

The above description was taken from the type in the collection of the late Dr. LeConte, which is a female, and, so far as I am aware, is the only specimen known. That author describes the elytra as "testaceis," as also the palpi and legs, but the terms used above seem more accurate.

The name *sexpunctatum*, assigned to it by Dr. LeConte, is preoccupied. The above is accordingly proposed in its place as a slight tribute to the late Dr. H. A. Hagen; one to whom the writer is indebted for valuable assistance in the past, and whose memory will always be cherished with reverance and affection by such as were fortunate enough to have been numbered among his friends, as well as held in the highest esteem by those to whom he was known only by his work as an entomologist.

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The unique above referred to is from the valley of the Colorado River.

Group xii. **variegatum.**

Maxillæ with the outer lobe biarticulate; frontal grooves single, parallel or rarely very feebly convergent; eyes large, prominent. Elytra distinctly striate, with at least the two inner striæ entire; humeri rounded; dorsal punctures two, situated on the third interval.

This is the largest group of the genus and the most difficult of study. Many of the species resemble each other very closely and exhibit a large amount of variation, especially in color and elytral markings. As a result the number has been needlessly multiplied, the characters on which several were based becoming evanescent when a large series of specimens is studied.

In more than half of the species the head is alutaceous. In fact, I had hoped to be able to make use of this character in subdividing the group, as suggested by LeConte. This, however, has been found to be impossible, as it would not only involve the separation of species otherwise very closely allied, such as *dorsale* and *postfasciatum*, but in some, as for instance *versicolor*, the head varies from very finely to not at all alutaceous. No other character has been found which could be made use of for its subdivision without, at the same time, destroying marked affinities.

The group, therefore, is unwieldy from its size, and it is impossible to place the species in natural order in a linear arrangement. It is hoped that the following table will afford some assistance to the student in the determination of our species, which follow in the text in what seems to be the best order for cabinet arrangement:

Striæ of elytra punctate.....2.
Striæ of elytra impunctate.
  Broad, feebly convex; testaceous with the occiput, apex at middle and base of thorax, and cloud-like spots on the elytra dusky; thorax subquadrate, slightly narrower at base than apex, hind angles not carinate; legs testaceous. Length .20–.24 inch ..... **tigrinum** Lec.
2. Thorax narrower at base than apex.....3.
  Thorax not perceptibly narrower at base than apex .....12.
3. Form depressed, striæ of elytra entire.....4.
  Form more or less convex ....5.
4. Head alutaceous.
  Thorax cordate, much narrower at base than apex, sides distinctly sinuate behind.
    Head and thorax coarsely alutaceous, cupreo-æneous, elytra testaceous, with bronzed or nearly black markings; thorax nearly twice as wide as long; base of antennæ and legs testaceous. Length .22–.25 inch.
    cordatum Lec.

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Head smaller than in *cordatum*, finely alutaceous; thorax not alutaceous, more than one-half wider than long; color nigro-æneous, the elytra usually with testaceous markings; legs piceous or rufo-piceous. Length .24–.30 inch ..... **insulatum** Lec.

Thorax subquadrate, slightly narrower at base than apex, sides at most obsoletely sinuate behind, hind angles obtuse; dark viridi-æneous, elytra with the apex, a submarginal spot about one-fourth from apex and rarely a short transverse band in front of the middle testaceous; legs rufous or rufo-piceous. Length .15–.18 inch ..... **intermedium** Kirby.

Head not alutaceous.

Thorax slightly narrower at base than apex, hind angles obtuse; head and thorax nigro-æneous, elytra brownish piceous, slightly æneous; legs rufous or rufo-piceous. Length .17–.18 inch ..... **dejectum** Casey.

Thorax scarcely more than one-half as wide at base as apex, hind angles rectangular; color and markings nearly as in *lucidum*; legs rufous. Length .15–.16 inch ..... **constricticolle** n. sp.

5. Elytra with the striæ entire ..... 6.

Elytra with several of the striæ abbreviated behind ..... 9.

6. Head alutaceous ..... 7.

Head not alutaceous ..... 8.

7. Small, elongate; head and thorax black or slightly æneous, the former very finely alutaceous: elytra varying from testaceous with nearly black markings to nearly black with testaceous markings; legs rufous. Length .10–.13 inch ..... **timidum** Lec.

Larger species [not less than .16 inch].

Thorax subcordate, distinctly narrower at base than apex; head and thorax æneous or nigro-æneous, elytra testaceous marked nearly as in *cordatum*; legs rufo-testaceous. Length .16–.20 inch ..... **nubiculosum** Chaud.

Thorax subcordate, slightly narrower at base than apex; form elongate; head and thorax nigro-æneous, elytra æneo-piceous, with a subhumeral blotch, a transverse band behind the middle and sometimes the apex paler, the markings ill-defined; legs testaceous. Length .20–.23 inch. **graciliforme** n. sp.

Thorax slightly subcordate, slightly narrower at base than apex.

Head and thorax viridi-æneous, elytra testaceous, with a transverse band slightly behind the middle and another between this and the apex fuscous; striæ scarcely less deep at tip; legs testaceous. Length .16–.18 inch. **viridicolle** Laf.

Dark viridi-æneous, elytra usually with a narrow transverse band about one-third from base, another about one-third from apex and an apical spot testaceous, the three usually connected along the margin; elytral striæ much finer at tip; legs testaceous. Length .16–.18 inch. **fraternum** Lec.

8. Thorax subtrapezoidal, basal impressions bistriate; black, slightly æneous, elytra often with a transverse band about one-third from apex and sometimes another about one-third from base rufous; elytra very slightly wider than the thorax, subparallel; legs rufo-piceous, the femora darker. Length .20–.24 inch ..... **mormon** n. sp.

Thorax subcordate, basal impressions unistriate; head and thorax æneous or nigro-æneous, elytra æneo-testaceous, with darker spots and bands;

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striæ coarsely punctate, intervals convex; legs testaceous. Length .17–.19 inch.....**scintillans** Bates.

9. Thorax with the hind angles distinctly carinate; head very finely or not at all alutaceous.....10.

Thorax with the hind angles very finely or not carinate; head distinctly alutaceous.....11.

10. Head at most very finely alutaceous; form and color nearly as in *timidum*, but slightly more convex, with the sides of the thorax; slightly more deeply sinuate behind; elytra with the first and second striæ entire, the fifth represented by a groove at tip; legs testaceous. Length .10–.13 inch. **versicolor** Lec.

Head not alutaceous.

Form robust; head and thorax nearly black, elytra dark testaceous, with three sinuous transverse bands nearly black; elytra nearly oval, the five inner striæ entire; legs brownish testaceous. Length .12 inch. **convexulum** n. sp.

Elongate, convex; black, slightly æneous; elytra scarcely wider than the thorax, subparallel, the first, second and fifth striæ entire, the others abbreviated for a short distance behind, sometimes with a small submarginal pale spot about one-fourth from apex; legs black, the tibiæ and tarsi more or less piceous. Length .18–.20 inch. **grandicolle** Lec.

Less elongate; nigro-æneous; elytra about one-half wider than the thorax, with a small submarginal pale spot about one-third from apex, the first, second and seventh striæ entire; legs piceous or nearly black. Length .16–.17 inch.....**aratum** Lec.

Smaller species [not exceeding .15 inch].

Sides of thorax arcuate in front, oblique behind, hind angles obtuse; form robust; black, slightly æneous; elytra slightly wider than the thorax, the first, second and fifth striæ entire; legs piceous. Length .11–.13 inch.....**morulum** Lec.

Sides of thorax arcuate in front, sinuate behind.

Bronzed; moderalely elongate, convex; thorax with the hind angles rectangular; elytra slightly wider than the thorax, intervals flat; legs piceous or rufo-piceous. Length .12–.15 inch. **dyschirinum** Lec.

Black, scarcely æneous; slightly elongate, convex; thorax with the hind angles acute; elytra about one-half wider than the thorax, intervals feebly convex; legs nearly black. Length .10–.11 inch. **vile** Lec.

11. Moderately convex, elongate; æneous or nigro-æneous, elytra with the apex, a subapical spot and often a short transverse band in front of the middle and a narrow line along the margin testaceous; thorax with the sides arcuate nearly to base, sinuate in front of the hind angles which are subrectangular and finely, almost obsoletely carinate; legs rufo-testaceous. Length .17–.22 inch.....**constrictum** Lec.

Convex, slender, very elongate; color nearly as in *constrictum*, the apex and margin of the elytra more or less testaceous: thorax with the sides arcuate to base hind angles obtuse, not carinate; legs rufo-testaceous. Length .18–.24 inch.....**contractum** Say.

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12. Head alutaceous.....13.
Head not alutaceous.....17.
13. Moderately broad, slightly convex: dull bluish black, rarely slightly æneous elytra often with a small submarginal pale spot about one-fourth from apex; legs black. Length .16–.22 inch.....**coloradense** n. sp.
Slightly depressed; nigro-æneous, the elytra usually with ill-defined paler markings; thorax with the sides feebly sinuate behind; hind angles subrectangular; elytra moderately finely striate; legs varying from dark rufous to black. Length .17–.23 inch.**approximatum** Lec.
More or less convex; elytra either with paler markings or testaceous with darker markings.....14.
14. Thorax squarely truncate at base.....15.
Thorax slightly obliquely truncate each side at base; elytra testaceous with darker markings.....16.
15. Hind angles of thorax obtuse.
Elytra distinctly wider than the thorax; nigro-æneous, elytra æneo-piceous with ill-defined paler markings; thorax with the sides arcuate, obsoletely sinuate in front of the hind angles; legs rufo-testaceous. Length .15–.20 inch.....**indistinctum** Dej.
Elytra very slightly wider than the thorax; less convex; head and thorax viridi-æneous, elytra fuscous with a humeral lunule, a transverse fascia behind the middle and the apex testaceous; thorax with the sides arcuate to base; legs rufo-testaceous. Legs .16–.18 inch.
æneicolle Lec.
Hind angles of thorax rectangular.
Nigro-æneous, elytra marked nearly as in *graciliforme*, the markings ill-defined, moderately deeply striate; head rather finely alutaceous; legs varying from rufous to piceous. Length .20–.24 inch.
dentellum Thunb.
Brown-bronze, elytra testaceous, marked somewhat as in *cordatum*, the markings broader and ill-defined; head and thorax very distinctly alutaceous; legs rufo-testaceous. Length .17–.19 inch.
versutum Lec.
Nigro-æneous, elytra either testaceous variegated with black, or black variegated with testaceous, the markings well defined.
Legs testaceous. Length .14–.19 inch.....**variegatum** Say.
Legs dark piceous or black. Length .13–.16 inch.....**nigripes** Kirby.
16. Thorax quadrate, the sides rather feebly arcuate in front, slightly sinuate behind.
Elongate; head and thorax æneous; elytra slightly wider than the thorax with a sub-basal spot, a small spot on the third interval about one-third from base, a transverse fascia about the middle and another between this and the apex nearly black; striæ moderately deep; legs testaceous. Length .15–.20 inch.....**variolosum** Mots.
Less elongate; head and thorax cupreo-æneous; elytra nearly one-half wider than the thorax, moderately finely striate, with cloud-like markings fuscous, arranged nearly as in *variolosum*, but often not clearly defined; legs testaceous. Length .15–.17 inch.
umbratum Lec.

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Thorax subquadrate, sides moderately strongly arcuate in front, deeply sinuate behind.

Broad, dilated; elytra more than one-half wider than the thorax, deeply striate, the striæ dilated at base, with a transverse depression behind the scutellum; head and thorax cupreo-æneous, elytra testaceous, with a small spot on the third interval about one-third from base, a transverse fascia about the middle and another between this and the apex nearly black; legs testaceous. Length .20–.24 inch.

postfasciatum Hamilton.

17. Elytra scarcely wider than the thorax..... .....18.

Elytra very distinctly wider than the thorax.

Form and color nearly as in *postfasciatum*, the elytra without postscutellar depression, more finely striate, the striæ not dilated at base, the markings narrower and paler; head and thorax bright viridi- or cupreo-æneous; legs testaceous. Length .20–.23 inch.....**dorsale** Say.

Slightly depressed; nearly black, slightly æneous, elytra slightly tinged with brownish, with a humeral lunule and a transverse band behind the middle pale yellow; legs testaceous. Length .14–.15 inch.

wickhami n. sp.

Slightly convex; brownish piceous or nearly black, immaculate; legs dark rufous. Length .12 inch.....**rubiginosum** Lec.

18. Moderately robust; æneous or nigro-æneous, the elytra immaculate; sides of thorax arcuate to base, hind angles obtuse with a short, fine carina; legs black. Length .17–.20 inch.....**obtusangulum** Lec.

Elongate, convex; head and thorax black, scarcely æneous, the elytra testaceous variegated with black, subparallel; sides of thorax feebly arcuate in front, slightly sinuate behind, hind angles rectangular, finely carinate; legs rufous. Length .13–.18 inch .....**ephippiger** Lec.

64. **B. tigrinum** Lec.—Form rather broad, feebly convex; color testaceous, occiput, apex at middle and base of thorax, and cloud-like spots on the elytra dusky. Head as wide as the thorax at apex; palpi testaceous; antennæ less than one-half as long as the body, testaceous. Prothorax scarcely one-half wider than long, subquadrate, narrower at base than apex, rugose at base; apex nearly truncate; median line fine, abbreviated before and behind; anterior transverse impression rather feeble and moderately close to the apex, the posterior deeper; basal impressions broad, rather shallow and feebly bistriate; sides with the margin very narrowly reflexed, arcuate in front, more or less sinuate behind; hind angles subobtuse, not carinate. Elytra slightly wider than the thorax, oblong-ovate, moderately deeply striate, much more finely at sides and apex; striæ entire, impunctate, the fifth slightly grooved at tip, the eighth close to the margin, but more distinct than in the others of this group; intervals moderately convex, especially the inner ones, the third with the first dorsal puncture about the middle, the second about one-sixth from apex; the dusky markings are more or less connected along the suture as far as the fourth stria, and consist of a basal cloud more marked on the humeri, a transverse band about the middle and a shorter one about one-fourth from apex; the margin and apex are pale. Head and thorax beneath testaceous, abdomen dusky. Legs testaceous. Length .20–.24 inch; 5 6 mm.

Distinct from all the other species of the genus by its peculiar

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coloration. It seems to vary hardly at all, except that the markings are slightly darker in some examples than in others, while in some the dusky spot at the apex of the thorax is wanting. The sides of the thorax are slightly more distinctly sinuate behind in some specimens than in others.

It is known to me only from California.

65. **B. insulatum** Lec.—Form nearly as in *cordatum*, but less depressed; color nigro-æneous, shining, the elytra usually with a band surrounding the humerus, often extending narrowly along the margin to behind the middle, and another transverse band about one-third from apex rufo-testaceous; epipleuræ varying from rufo-testaceous to nigro-æneous. Head smaller than in *cordatum*, scarcely as wide as the thorax at apex, finely alutaceous; palpi piceous; antennæ scarcely one-half as long as the body, piceous. Prothorax cordate, more than one-half wider than long, very distinctly narrower at base than apex, not alutaceous, shining, rugose at base; apex slightly emarginate; median line fine, abbreviated before and behind; transverse impressions moderately distinct, the anterior distant from the apex; basal impressions moderately deep, obsoletely bistriate; sides with the margin narrowly reflexed, arcuate to behind the middle, distinctly sinuate behind; hind angles rectangular, finely carinate. Elytra scarcely one-half wider than the thorax, oblong-ovate, finely striate; striæ entire, finely punctate to behind the middle, the seventh slightly grooved at tip; intervals feebly convex, the third with the first dorsal puncture about one-third from base, the second about one-fourth from apex. Beneath black, often slightly tinged with green, shining. Legs piceous or nearly black, rarely rufo-piceous. Length .24-.30 inch; 6-7.5 mm.

This species is distinct from *cordatum* by the characters above given. The elytral markings are subject to considerable variation, being nearly effaced in some specimens, while in others they resemble those of the latter species quite closely. The form described above is the one most commonly met with.

Its range of distribution is confined to the region west of the Rocky Mountains. It occurs in Wyoming, Utah and along the Pacific coast from British Columbia to California.

66. **B. cordatum** Lec.—Form moderately elongate, depressed. Head and thorax cupreo-æneous, the elytra testaceous with the following bronzed or nearly black markings: an elongate humeral spot, a small oblong spot on the third interval about one-third from base, and two transverse bands, the first slightly behind the middle extending nearly to the margin, the second about one-fourth from apex and attaining the fifth stria, the last three connected by a line along the suture extending from the base backward to the second transverse band and laterally to the second stria; epipleuræ testaceous. Head slightly wider than the thorax at apex, coarsely alutaceous; palpi testaceous, darker towards the tip; antennæ about one-half the length of the body, fuscous, the basal joints rufo-testaceous. Prothorax cordate, nearly twice as wide as long, very distinctly narrower at base than apex, alutaceous, slightly rugose at base; apex nearly truncate;

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median line fine, abbreviated before and behind; transverse impressions rather feebly marked, the anterior distant from the apex; basal impressions moderately deep, obsoletely bistriate; sides with the margin narrowly reflexed, strongly arcuate nearly to base, sinuate in front of the hind angles, which are rectangular and finely carinate. Elytra less than one-half wider than the thorax, oblong-ovate, moderately finely striate; striæ entire, finely punctate to behind the middle, the seventh slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, sometimes feebly tinged with green, shining. Legs testaceous, the femora rarely slightly darker. Length .22-.25 inch; 5.5-6.25 mm.

Most nearly related to the preceding, with which it agrees in having the thorax very distinctly narrower at base than apex, cordate, with the basal impressions obsoletely bistriate, the outer stria being often very difficult of detection. The head is much more coarsely alutaceous and wider than in *insulatum*, and the thorax is wider as compared with its length, nearly truncate at apex, distinctly alutaceous, and with the sides more strongly arcuate and sinuate for a shorter distance behind. The color is also different, and the form slightly more depressed.

It was described by LeConte from New York. It is known to me also from Missouri, Nebraska, Colorado, the Indian Territory and Texas.

67. **B. nubiculosum** Chaud.—Form robust, moderately convex; color æneous or nigro-æneous, the elytra marked nearly as in *cordatum*, the markings less clearly defined; epipleuræ pale. Head finely alutaceous, as wide as the thorax at apex; palpi rufous; antennæ about one-half the length of the body, fuscous. Prothorax cordate, rather more than one-half wider than long, distinctly narrower at base than apex, scarcely rugose at base; apex truncate; median line fine, abbreviated before and behind; transverse impressions moderately distinct; basal impressions deep, bistriate; sides with the margin narrowly reflexed, arcuate to behind the middle, sinuate in front of the hind angles, which are rectangular and carinate. Elytra nearly one-half wider than the thorax, oblong-oval, moderately deeply striate; striæ entire, punctate to behind the middle, the seventh slightly grooved at apex; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath nearly black, shining, the abdomen sometimes rufo-piceous or rufous, especially towards the tip. Legs rufous. Length .16—.20 inch; 4-5 mm.

Smaller and more convex than the two preceding, with the basal impressions of the thorax more distinctly bistriate, and the form less elongate. In some respects it seems to lead towards those that follow. It is quite easily recognizable from its allies by the characters above given and seems subject to but slight variation. The thorax, although distinctly narrower at base than apex, is less narrowed behind than in *cordatum* and *insulatum*.

It is known to me from Utah, Texas, New Mexico, Arizona and California.

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68. **B. graciliforme** n. sp.—Form slender, elongate, slightly convex. Head and thorax nigro-æneous, often tinged with cupreous, shining; elytra æneo-piceous with an irregular humeral blotch, a transverse band behind the middle and the apex obscurely testaceous, the markings ill-defined. Head very finely alutaceous, as wide as the thorax at apex; palpi piceous; antennæ rather more than one-half the length of the body, piceous, the basal joints slightly paler. Prothorax slightly subcordate, about one-half wider than long, slightly narrower at base than apex; apex feebly emarginate; median line deep, abbreviated behind; transverse impressions distinct; basal impressions deep, bistriate; sides with the margin narrowly, but distinctly reflexed, strongly arcuate nearly to base, deeply sinuate in front of the hind angles, which are rectangular and carinate. Elytra slightly wider than the thorax, elongate, oblong-ovate, moderately deeply striate, less deeply towards the sides; striæ entire, distinctly punctate to behind the middle, the seventh, or more rarely the fifth, grooved at tip; intervals convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, slightly æneous, shining, the abdomen more or less rufous, especially towards the tip. Legs testaceous. Length .20–.23 inch; 5–5.75 mm.

Very close to *dentellum*, but distinct by the form of the thorax, which is slightly narrower at base than apex, with the sides more strongly arcuate and sinuate for a shorter distance behind. The basal impressions are less broad. The form is more slender, and the elytral markings are even less defined than in average specimens of the latter species, with which it has been confused in collections. The legs are always testaceous.

It is known to me from Massachusetts, Pennsylvania, Michigan, Illinois and Iowa.

69. **B. dentellum** Thunb.—Form slightly elongate, feebly convex. Head and thorax nigro-æneous, often tinged with greenish, especially along the margin: elytra dark brownish piceous with an irregular subhumeral blotch, a transverse band behind the middle and the apex paler, the markings more or less ill-defined. Head rather finely alutaceous, as wide as the thorax at apex; palpi piceous; antennæ about one-half the length of the body, piceous, the first joint more or less rufous. Prothorax subquadrate, about one-half wider than long, as wide at base as apex; apex feebly emarginate; median line distinct, abbreviated in front; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly but distinctly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra less than one-half wider than the thorax, oblong-ovate, moderately deeply striate, more finely at the sides; striæ entire, punctate to behind the middle, the seventh grooved at tip; intervals feebly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs varying from rufous to rufo-piceous. Length .20–.24 inch; 5–6 mm.

This species quite closely resembles *graciliforme*. The thorax, however, is subquadrate, and as wide at base as apex, with the sides less strongly arcuate in front and less deeply sinuate behind. The

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form is less slender, and the elytra are somewhat wider as compared with the thorax. The coloration is nearly the same, except that the elytral markings are, as a rule, better defined in the present species and the legs darker. The surface is rather less shining. It is also closely allied to *approximatum*, but may be separated by the characters given in the table. It has been known in our lists as *undulatum* Sturm.

With *dentellum* I have united *incrematum* Lec., which occurs on the Pacific coast, the study of a fairly large series having convinced me that the two cannot be retained as distinct. *B. arcuatum* Lec. is also synonymous with this species.

It occurs in the more northern parts of the continent from the Atlantic to the Pacific, being known to me from Nova Scotia, Marquette, Mich., Winnipeg, Man., Cœur d'Alene, Idaho (Wickham), Oregon, Washington, British Columbia, Vancouver Island and Alaska. It also occurs in Europe.

70. **B. coloradense** n. sp.—Form broad, feebly convex; color dull black, often with a bluish or more rarely slightly bronze tinge, elytra frequently with a small submarginal pale spot about one-fourth from apex. Head finely alutaceous, as wide as the thorax at apex; palpi black; antennæ about one-half as long as the body, black. Prothorax subquadrate, nearly twice as wide as long, as wide at base as apex, finely alutaceous; apex truncate; median line distinct, usually entire, though more marked between the transverse impressions, which are rather feeble; basal impressions broad, moderately deep, bistriate; sides with the margin narrowly reflexed, arcuate nearly to base, feebly sinuate in front of the hind angles, which are rectangular and distinctly carinate. Elytra slightly wider than the thorax, oblong-ovate, moderately finely striate, the surface usually very finely alutaceous; striæ entire, more finely impressed towards the tip, finely but distinctly punctate to behind the middle, the seventh slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs black. Length .16–.22 inch; 4–5.5 mm.

This species seems most closely allied to *approximatum*, from which it differs by its more convex form, with the thorax wider in proportion to its length and the sides arcuate nearly to base, being slightly sinuate for only a short distance in front of the hind angles. The surface is also less shining than in the latter species, the thorax and elytra being very finely and the head more distinctly alutaceous. It seems subject to but slight variation, the submarginal spot being sometimes absent. In one specimen that I have seen there is, in addition, a feebly indicated submarginal spot about one-third from base.

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About thirty specimens have been examined. A large number of these were collected by Mr. F. C. Bowditch and myself in the mountains of southwestern Colorado, at an altitude of from 8000 to 10,000 feet. It is known to me also from Washington, British Columbia and Vancouver Island, and from the Coskino Canon, Arizona (Wickham).

71. **B. approximatum** Lec.—Form moderately broad, slightly depressed; color nigro-æneous or æneous, often tinged with cupreous, shining, the elytra with a subbasal spot, a transverse band in front of and another behind the middle and the apex pale, the above markings often ill-defined, sometimes partially or almost entirely obliterated. Head alutaceous, scarcely as wide as the thorax at apex; palpi piceous; antennæ about one-half as long as the body, piceous. Prothorax subquadrate, rather more than one-half wider than long, as wide at base as apex; apex nearly truncate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions broad, distinctly bistriate; sides with the margin very narrowly reflexed, moderately arcuate in front, feebly sinuate behind; hind angles subrectangular, strongly carinate. Elytra distinctly wider than the thorax, oblong-ovate, moderately deeply striate; striæ entire, finely punctate to behind the middle, the fifth or seventh grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs varying from dark rufous to nearly black. Length .17-.23 inch; 4.25-5.75 mm.

A very variable species and one difficult to define. The color varies as indicated above. The thorax is often more or less finely alutaceous, sometimes scarcely perceptibly so. The sides are feebly or sometimes only obsoletely sinuate behind. The elytra vary in the depth of the striæ, and the fifth or sometimes the seventh stria is grooved at apex. The color of the legs varies as stated above.

It is separable from *dentellum* by its usually broader, more depressed form, with the thorax usually slightly wider as compared with its length, the sides much less distinctly sinuate behind and the hind angles more strongly carinate. The elytra are also more finely striate with the intervals flat. From *coloradense* it is recognizable by its more depressed form, proportionally narrower thorax, with the sides arcuate for a less distance behind the middle, and by its more shining surface.

It occurs on the Pacific coast from British Columbia to California and in Nevada and Arizona. I have seen one specimen from as far east as Dacota.

72. **B. indistinctum** Dej.—Form rather elongate, slightly convex. Head and thorax nigro-æneous, often slightly tinged with green, shining; elytra æneo-piceous, marked nearly as in *approximatum*, the markings usually ill-defined. Head finely alutaceous, as wide as the thorax at apex; palpi piceous or rufo-

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piceous; antennæ about one-half the length of the body, piceous or dark fuscous, the basal joints slightly paler. Prothorax subquadrate, about one-half wider than long, as wide at base as apex, scarcely rugose at base; apex nearly truncate; median line distinct, abbreviated at each end; transverse impressions moderately distinct; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, moderately arcuate in front, not sinuate behind or at most obsoletely so in front of the hind angles, which are subobtuse, but not rounded and finely carinate. Elytra slightly wider than the thorax, oblong-ovate, finely striate; striæ entire, finely punctate to behind the middle, the seventh slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs rufous or rufo-testaceous. Length .15–.20 inch; 3.75–5 mm.

Closely allied to *approximatum*, but distinct by its more elongate and more convex form, proportionally narrower thorax, the sides of which are moderately arcuate nearly to base and at most obsoletely sinuate in front of the hind angles, which are subobtuse and finely carinate. It is subject to less variation than in the latter species.

It occurs along the Pacific coast from California to British Columbia.

73. **B. versutum** Lec.—Form moderately broad, slightly convex; color brown-bronze, the head and thorax subopaque, the elytra testaceous, with bronze markings arranged somewhat as in *cordatum*, but broader and not clearly defined. Head densely alutaceous, as wide as the thorax at apex; palpi rufo-piceous; antennæ about one-half as long as the body, piceous, the basal joints more or less rufous. Prothorax subquadrate, about one-half wider than long, as wide at base as apex, alutaceous, somewhat less densely so on the disc, rugose at base; apex nearly truncate; median line distinct, abbreviated before and behind; transverse impressions rather feeble, especially the anterior; basal impressions moderately deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately finely striate; striæ entire, distinctly punctate to behind the middle, the fifth slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath nearly black, shining. Legs rufo-testaceous. Length .17–.19 inch; 4.25–4.75 mm.

This species seems to lead from *indistinctum* and its allies towards *dorsale*, *variolosum*, etc. It is most nearly allied to the first-named species, but differs by the more strongly alutaceous head and thorax, the latter with the sides distinctly sinuate behind and the hind angles rectangular, and by the more deeply striate elytra, as well as by its distinctly brown-bronze color. The form is also broader and slightly less convex, and the elytra are wider as compared with the thorax.

It is known to me from New Hampshire, Massachusetts (Lowell, Chicopee), Marquette, Mich., and Bayfield, Wis. (Wickham).

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74. **B. dorsale** Say.—Form broad, dilated, slightly convex. Head and thorax bright viridi-æneous, sometimes more or less coppery, shining; elytra pale testaceous, with moderately well-defined fuscous markings, these consisting of a small spot on the third interval about one-third from base, a sinuous transverse band about or slightly behind the middle, extending nearly to the margin, and another shorter one between this and the apex. Head shining, not alutaceous, as wide as the thorax at apex; palpi testaceous, slightly darker towards the tip; antennæ about one-half the length of the body, fuscous, the basal joints testaceous. Prothorax subquadrate, about one-half wider than long, as wide at base as apex, scarcely rugose at base; median line fine, abbreviated before and behind; anterior transverse impression feeble, the posterior more marked; basal impressions broad, deep, bistriate; base slightly obliquely truncate each side; sides with the margin narrowly reflexed, moderately strongly arcuate in front, distinctly sinuate behind; hind angles rectangular, carinate. Elytra more than one-half wider than the thorax, oblong-oval, moderately finely striate; striæ entire, not dilated at base, finely punctate to behind the middle, the fifth, or more rarely the seventh, slightly grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs testaceous. Length .20–.23 inch; 5–5.75 mm.

It approaches very closely the next species, but the head and thorax are not alutaceous, and the elytra are paler with the markings fuscous and without postscutellar depression, while the striæ are finer and not dilated at base, and the intervals nearly flat. It has been confused in collections with *postfasciatum*.

It occurs from Missouri and Nebraska westward to the Rocky Mountains, and northward to Manitoba and Montana. I have seen one specimen from as far east as southern Illinois.

75. **B. postfasciatum** Hamilton.—Closely allied to the preceding. Head and thorax more coppery bronze, alutaceous, the latter with the median line deeper, subentire, the transverse impressions more marked, and the base more coarsely rugose. Elytra more deeply striate, with a transverse depression behind the scutellum; striæ dilated at base and more deeply and coarsely punctate; markings broader and nearly black; otherwise as in *dorsale*. Length .20 .24 inch; 5–6 mm.

It seems to bear nearly the same relation to *dorsale* that *variolosum* does to *umbratum*.

It was described by Hamilton from Allegheny, Pa. I have seen specimens from Massachusetts (Chicopee, Springfield), Pennsylvania, Ohio, Illinois, Iowa, Kansas and Texas.

76. **B. variolosum** Mots.—Form rather slender, elongate, slightly convex. Head and thorax æneous, often with greenish reflections, especially at the sides; elytra testaceous, with the following well defined nearly black markings: a small spot on the third interval about one-third from base, a sinuous band about or slightly behind the middle extending transversely from the margin to the suture, and another between this and the apex, connected along the suture with the latter

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by a narrow line and rarely attaining the margin; in some specimens there are traces of another transverse band in front of the middle. Head alutaceous, as wide as the thorax at apex; palpi testaceous, the penultimate joint of the maxillary piceous; antennæ about one-half the length of the body, piceous, the basal joints testaceous. Prothorax quadrate, about one-half wider than long, as wide at base as apex, alutaceous, less distinctly so or not at all on the disc, more or less rugose at base; median line distinct, subentire; anterior transverse impression usually rather feebly marked, the posterior deeper; basal impressions broad, moderately deep, bistriate; base slightly obliquely truncate each side; sides with the margin very narrowly reflexed, slightly arcuate in front, rather feebly sinuate behind; hind angles rectangular, carinate. Elytra slightly wider than the thorax, elongate, subparallel, oblong-ovate, moderately deeply striate; striæ entire, punctate to behind the middle, the fifth grooved at tip; intervals slightly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs testaceous. Length .15-.20 inch; 3.75–5 mm.

A very pretty species, quite distinct from the others of the group. The humeri of the elytra are more nearly subangulate than in any other species of the series. It seems subject to but slight variation.

It occurs in Nevada and along the Pacific coast from Alaska to California.

77. **B. umbratum** Lec.—Form rather slender, slightly convex. Head and thorax cupreo-æneous, rarely tinged with green or nearly black; elytra testaceous, with a small spot on the third interval about one-third from base, a transverse band about the middle, concave backwards, another between this and the apex, and sometimes an ill-defined subbasal cloud dusky, the bands often more or less interrupted and usually narrowly connected along the suture. Head alutaceo-granulate, as wide as the thorax at apex; palpi rufous, darker towards the tip; antennæ about one-half as long as the body, fuscous, the basal joints testaceous. Prothorax quadrate, more or less alutaceous, somewhat rugose at base, as wide at base as apex, rather more than one-half wider than long; apex nearly truncate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions broad, moderately deep, bistriate; base slightly obliquely truncate each side; sides with the margin very narrowly reflexed, feebly arcuate in front, slightly sinuate behind; hind angles rectangular, finely carinate. Elytra nearly one-half wider than the thorax, oblong-ovate, finely striate; striæ entire, very finely punctate to behind the middle, the fifth slightly grooved at tip; intervals feebly convex: the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs testaceous. Length .15-.17 inch: 3.75-4.25 mm.

This species seems very constant in its coloration. It is most nearly allied to *variolosum*, from which it differs by its less elongate form, slightly broader thorax, and proportionally wider and more finely striate elytra with the markings brownish and cloud like.

It is apparently confined to the Rocky Mountain region, being known to me only from Colorado, Wyoming and Nevada. Even in its limited range it appears to be quite local and nowhere very common.

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78. **B. viridicolle** Laf.—Form moderately elongate, convex. Head and thorax viridi-æneous; elytra dark testaceous, with an ill-defined, undulating, transverse band very slightly behind the middle, and another between this and the apex fuscous. Head as wide as the thorax at apex, alutaceous; palpi testaceous; antennæ about one-half the length of the body, fuscous, the basal joints testaceous. Prothorax slightly subcordate, about one-half wider than long, slightly narrower at base than apex, finely alutaceous; apex truncate; median line fine, abbreviated before and behind; transverse impressions moderately distinct; basal impressions deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra scarcely one-half wider than the thorax, oblong-ovate, moderately deeply striate; striæ entire, distinctly punctate nearly to apex, the seventh slightly grooved at tip; intervals convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath nearly black, shining, the last segment of the abdomen dark rufous. Legs testaceous. Length .16-.18 inch; 4-4.5 mm.

A very pretty species, quite distinct by the characters above given. The markings of the elytra are not clearly defined, and in some specimens examined, in addition to those already mentioned, there are traces of a subbasal cloud.

It is known to me from Lowell, Mass. (Blanchard), Illinois, Iowa, Nebraska, the Rocky Mountains and Winnipeg, Man.

79. **B. fraternum** Lec.—Form slightly robust, moderately convex; color usually dark viridi-æneous, the elytra with a narrow transverse band about one-third from base, another about one-third from apex and an apical spot testaceous, the three usually connected by a narrow line along the margin, the transverse bands extending obliquely inwards towards the suture, the anterior and the apical spot sometimes nearly effaced. Head alutaceous, as wide as the thorax at apex; palpi piceous; antennæ about one-half as long as the body, piceous, with at least the first joint rufous. Prothorax slightly subcordate, about one-half wider than long, very slightly narrower at base than apex, finely alutaceous; apex nearly truncate; median line distinct; basal impressions broad, deep, rather feebly bistriate; sides with the margin narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-oval, moderately deeply striate, very finely towards the tip; striæ distinctly punctate to behind the middle, the outer ones nearly effaced at tip, the fifth or seventh slightly grooved at apex; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs rufous or rufo-testaceous. Length .16-.18 inch; 4-4.5 mm.

It approaches *viridicolle* by the form of the thorax, but may readily be distinguished by the striæ of the elytra much finer at tip, as well as by its color and slightly less convex form.

This seems to be distinctly a southern species, and is not common in collections. It was described by LeConte from Habersham County, Georgia, and is known to me from that State, Louisiana, Virginia, Pennsylvania and Nantucket, Mass.

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80. **B. æneicolle** Lec.—Form rather slender, elongate, feebly convex. Head and thorax æneous, more or less tinged with green or coppery; elytra brownish or fuscous, with a humeral lunule extending posteriorly along the margin nearly to the middle, a transverse fascia behind the middle, concave backwards, and the apex testaceous, the above markings well defined; epipleuræ more or less testaceous. Head finely alutaceous, scarcely as wide as the thorax at apex; palpi rufopiceous; antennæ scarcely one-half as long as the body, fuscous, the basal joints testacous. Prothorax subquadrate, more than one-half wider than long, as wide at base as apex, the surface very finely alutaceous; apex nearly truncate; median line distinct, abbreviated before and behind; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, arcuate from apex to base; hind angles obtuse, but not rounded, strongly carinate. Elytra very slightly wider than the thorax, oblong-ovate, finely striate; striæ entire, finely punctate to behind the middle, the seventh grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs rufotestaceous. Length .16–.18 inch; 4–4.5 mm.

A very pretty and easily recognizable species.

It is apparently very rare, but six specimens being known to me, one each from Lake Superior and Winnipeg, Man., two from Cheyenne, Wyo., and two from Colorado. Of the last two one is from Garland.

81. **B. variegatum** Say.—Form moderately broad, slightly convex. Head and thorax nigro-æneous, usually more or less tinged with green or coppery; elytra either testaceous, variegated with black, or black, variegated with testaceous. Head alutaceous, as wide as the thorax at apex; palpi rufous, darker towards the tip; antennæ about one-half as long as the body, dark fuscous, the basal joints paler. Prothorax subquadrate, about one-half wider than long, as wide at base as apex, usually finely alutaceous, more finely so or not at all on the disc; apex truncate; median line deep, usually abbreviated before and behind; transverse impressions moderately distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, slightly arcuate in front, more or less distinctly sinuate behind; hind angles rectangular, strongly carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately deeply striate; striæ entire, distinctly punctate to behind the middle, the seventh, or more rarely the fifth, slightly grooved at tip; intervals more or less convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs rufous or rufo-testaceous. Length .14–.19 inch; 3.5–4.75 mm.

As may be seen from the above description, this is a very variable species. As above defined it includes both *patruele* Dej. and *conspersum* Chaud., neither of which I have been able to separate by constant characters.

The elytra vary greatly in their markings, which are very difficult to describe. The form which is perhaps the most common has the ground-color testaceous, with the following black markings: a hu-

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meral spot, a narrow line along the suture, and three more or less interrupted, sinuous bands, which do not attain the margin. These gradually become broader and more extended until the black predominates, the elytra being then spotted and banded with testaceous. Finally, in the form known as *posticum* Hald., we have the pale markings confined to the posterior third, the others being entirely effaced. The depth of the elytral striæ also varies, and with it the convexity of the intervals, which are nearly flat in those specimens in which the elytra are most finely striate. The third interval is usually slightly wider than the others, but this is not a constant character. The thorax varies slightly in width as compared with its length, and in the depth of the sinuation of the sides at base.

As above constituted it occurs from the Atlantic to the Pacific, being known to me from Nova Scotia, Canada, the New England States, New York, New Jersey, Pennsylvania, Maryland, Ohio, Michigan and the Lake Superior region, Illinois, Missouri, Wisconsin, Iowa, Manitoba, Nebraska, Colorado, Nevada, and along the Pacific coast from California to British Columbia. Specimens from Nevada and the Pacific coast are usually labeled *conspersum*.

82. **B. nigripes** Kirby.— Form rather broad, slightly convex; color black, more or less æneous, the elytra variegated with testaceous markings, these usually consisting of a basal spot, a transverse band in front of and another behind the middle, and often an apical spot, the transverse bands rarely attaining the suture and often more or less interrupted. Head alutaceous, as wide as the thorax at apex; palpi piceous or nearly black; antennæ about one-half the length of the body, dark piceous or black. Prothorax subquadrate, rather more than one-half wider than long, as wide at base as apex, usually finely alutaceous; apex truncate; median line distinct, subentire or slightly abbreviated at each end; transverse impressions moderately distinct; basal impressions bistriate; sides with the margin very narrowly reflexed, slightly arcuate in front, rather feebly sinuate behind; hind angles rectangular, strongly carinate. Elytra oblong-ovate, about one-half wider than the thorax, moderately deeply striate; striæ entire, distinctly punctate to behind the middle, the seventh slightly grooved at tip; intervals feebly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs dark piceous or black. Length .13–.16 inch; 3.25–4 mm.

Very closely allied to *variegatum*, of which it may prove to be only a variety.

It is known to me from Anticosti and the Gulf of the St. Lawrence (Henshaw), the Lake Superior region, Manitoba (Winnipeg), Alberta (Calgary), Montana, Colorado, Utah, Oregon, Washington, British Columbia and Vancouver Island.

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83. **B. intermedium** Kirby.—Form elongate, slightly depressed; color dark viridi-æneous, more rarely bluish or slightly cupreous, the elytra with a submarginal spot about one-fourth from apex and an apical spot testaceous, the two usually connected along the margin, rarely also with a short transverse band about one-third from base extending obliquely inwards about half way to the suture. Head alutaceous, as wide as the thorax at apex; palpi piceous or rufo-piceous, paler at base; antennæ scarcely one-half as long as the body, dark fuscous, the basal joints paler. Prothorax subquadrate, rather more than one-half wider than long, narrower at base than apex, finely alutaceous; apex truncate; median line very fine, abbreviated before and behind; transverse impressions feebly marked; basal impressions small, moderately deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, oblique behind, at most only obsoletely sinuate in front of the hind angles, which are obtuse, but not rounded, carinate. Elytra less than one-half wider than the thorax, elongate, oblong-ovate, moderately finely striate; striæ entire, finely punctate to behind the middle, the seventh slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs varying from rufous to rufo-piceous, the femora usually darker. Length .15–.18 inch; 3.75–.4.5 mm.

Quite distinct from the others of the group. It seems to lead from *variegatum* and its allies towards *constrictum* and *contractum*.

It occurs in Manitoba, S. Dakota, Montana, Nebraska, Kansas, Iowa, Illinois, Mississippi, the Indian Territory, Texas, Colorado, New Mexico, Arizona and Southern California.

84. **B. convexulum** n. sp.—Form robust. Head and thorax nearly black, scarcely æneous, shining, the latter slightly tinged with brown; elytra dark testaceous with a sinuous transverse band about one-third from base, another broader one about the middle, and another between this and the apex nearly black, the markings well defined. Head as wide as the thorax at apex, not alutaceous; palpi rufo-piceous; antennæ about one-half the length of the body, dark fuscous, the basal joints testaceous. Prothorax subtrapezoidal, about one-half wider than long, slightly narrower at base than apex; apex feebly emarginate; median line distinct, abbreviated in front; transverse impressions moderate; basal impressions broad, deep, very distinctly bistriate; sides with the margin very narrowly reflexed, arcuate in front, oblique behind, slightly sinuate in front of the hind angles, which are subrectangular and strongly carinate. Elytra about one-half wider than the thorax, nearly oval, moderately deeply striate; striæ very distinctly, but not closely punctate to behind the middle, the five inner entire, the fifth slightly grooved at tip; intervals slightly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs brownish testaceous. Length .12 inch; 3 mm.

A very pretty and well-marked little species, allied to *versicolor* and *timidum*, but distinct by its more robust form, more oval elytra, and by the form of the thorax.

Described from four specimens from British Columbia. I have since seen one example from Laggan, Alberta.

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85. **B. timidum** Lec.—Form elongate, slightly convex. Head and thorax black, slightly æneous; elytra usually testaceous with three transverse bands, more or less connected along the suture, piceous or nearly black, sometimes nearly black with two pale, transverse bands, or rarely with the transverse bands nearly effaced. Head very finely, sometimes scarcely perceptibly, alutaceous: palpi piceous, usually paler at base; antennæ scarcely one-half the length of the body, piceous, the basal joints more or less rufous. Prothorax subcordate, narrower at base than apex, more than one-half wider than long; apex truncate; median line distinct; basal impressions broad, moderately deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra oblong-ovate, scarcely one-half wider than the thorax, moderately finely striate; striæ entire, punctate to behind the middle, the fifth slightly grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs rufous or rufo-piceous. Length .10–.13 inch; 2.5–3.25 mm.

The name *timidum* has previously been regarded as a synonym of *versicolor* Lec. A careful study of LeConte's types of these two species and of *pictum*, however, shows that the last two are synonymous, while *timidum* is distinct.

This species resembles the next very closely, but differs in having the elytral striæ entire. It is also less convex, with the sides of the thorax less strongly arcuate in front and less deeply sinuate behind. From *convexulum* it differs by its much more elongate and less convex form, with the outer striæ of the elytra not abbreviated behind, and by the form of the thorax.

It is known to me from Lake Superior, Manitoba, Colorado and the Rocky Mountain region, Utah, Nevada, Arizona, and on the Pacific coast from California to British Columbia.

86. **B. versicolor** Lec.—Form slightly elongate, moderately convex; color nearly as in *timidum*. Head very finely or not alutaceous, as wide as the thorax at apex; palpi rufo-piceous; antennæ scarcely one-half as long as the body, piceous, more or less rufous at base. Prothorax subcordate, about one-half wider than long, distinctly narrower at base than apex, scarcely rugose at base; apex nearly truncate; median line fine, extending between the transverse impressions, which are distinct; basal impressions deep, bistriate; sides with the margin narrowly reflexed, strongly arcuate in front, usually deeply sinuate behind; hind angles rectangular or subacute, carinate. Elytra about one-half wider than the thorax, oblong-oval, moderately deeply striate; striæ distinctly punctate to behind the middle, the two inner entire, the others more or less abbreviated behind, the fifth represented by a groove at tip: intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs rufous or rufo-piceous. Length .10–.14 inch; 2.5–3.5 mm.

Closely allied to the preceding, but distinct by the outer striæ of the elytra abbreviated behind, and by its more convex form. The

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thorax usually has the sides more strongly arcuate in front and more deeply sinuate behind, but the depth of the sinuation varies from strongly marked in typical specimens to nearly obsolete in the form known as *mimus* Lec. mss. As in *timidum* the color of the elytra varies greatly.

The names *flavopictum* Mots. and *pictum* Lec. have at different times been applied to this species, while *timidum* Lec has been regarded as a synonym. As stated under the description of the latter species, a study of LeConte's types shows that *pictum*, not *timidum*, is identical with the present species. It happens, however, very fortunately that most identifications have been made with the type of *versicolor* and not with that of *timidum*, so that the distribution of these species, as recorded by our local lists, is in the main correct.

It occurs throughout the greater part of this country and Canada, specimens being known to me from nearly all the States and from Anticosti, the Gulf of the St. Lawrence and Manitoba on the North, to Florida, Texas and Southern California on the South.

87. **B. constrictum** Lec.—Form moderately elongate, slightly convex; color æneous or nigro-æneous, usually tinged with green, the elytra with a submarginal spot near the apex and the apex testaceous, the two usually connected along the margin forming an apical lunule, often also with a short transverse band in front of the middle and a narrow line along the margin of the same color. Head alutaceous, as wide as the thorax at apex; palpi rufous, darker towards the tip; antennæ about one-half the length of the body, fuscous, the basal joints paler. Prothorax cordate, about one-half wider than long, distinctly narrower at base than apex, finely alutaceous; apex truncate; median line fine, abbreviated at each end; transverse impressions rather feeble; basal impressions small, bistriate, the outer stria small and close to the angle; sides with the margin very narrowly reflexed, strongly arcuate nearly to base, sinuate in front of the hind angles, which are subrectangular and very finely carinate. Elytra slightly wider than the thorax, oblong-ovate, moderately finely striate, more finely towards the apex; striæ punctate to behind the middle, the first, second and fifth entire, the others slightly abbreviated behind, the fifth grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath nearly black, shining. Legs rufo-testaceous. Length .17-.22 inch; 4.25-5.5 mm.

This species resembles *contractum* very closely, and may ultimately prove to be only a variety of it. The form is, however, less elongate and less convex, and the sides of the thorax are slightly sinuate in front of the hind angles, which are subrectangular and very finely carinate.

Less abundant, but more widely distributed than the last named, occurring over nearly the same territory and extending as far West as Nebraska, New Mexico and Texas.

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88. **B. contractum** Say.—Form slender, elongate, convex; color nigro-æneous, often tinged with green, the elytra usually with the apex and a line along the margin more or less distinctly testaceous. Head finely alutaceous, as wide as the thorax at apex; palpi rufo-piceous or piceous; antennæ scarcely one-half as long as the body, dark fuscous, the basal joints slightly paler. Prothorax subcordate, nearly one-half wider than long, distinctly narrower at base than apex; apex nearly truncate; median line fine, abbreviated before and behind; transverse impressions feeble; basal impressions small, bistriate, the outer stria close to the angle; sides with the margin very narrowly reflexed, arcuate to base; hind angles obtuse, but not rounded, not carinate. Elytra slightly wider than the thorax, elongate, oblong-ovate, subparallel, striate nearly as in *constrictum*; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath piceous or nearly black, the abdomen sometimes dark rufous. Legs rufous. Length .18–.24 inch; 4.5–6 mm.

Very close to *constrictum*, but more slender and elongate and more convex. The thorax is proportionally somewhat longer, with the sides arcuate to base and the hind angles obtuse and not carinate.

It seems to be confined to the more eastern portions of the country, occurring near the sea-coast from Massachusetts to Florida. I have seen specimens from as far West as Ohio and Tennessee.

89. **B. dejectum** Casey.—Form slightly elongate, depressed. Head and thorax nigro-æneous, shining; elytra brownish piceous, slightly æneous. Head not alutaceous, scarcely as wide as the thorax at apex; palpi rufo-piceous; antennæ nearly one-half the length of the body, rufo-piceous, scarcely paler at base. Prothorax slightly subcordate, less than one-half wider than long, slightly narrower at base than apex, more or less rugose at base; apex nearly truncate; median line fine, extending between the transverse impressions, which are distinct; basal impressions broad, moderately deep, bistriate; sides with the margin narrowly reflexed, arcuate, scarcely sinuate in front of the hind angles, which are obtuse, but not rounded, and finely carinate. Elytra slightly wider than the thorax, elongate, oblong-ovate, subparallel, moderately finely striate; striæ entire, distinctly punctate to behind the middle, the fifth slightly grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-fourth from apex. Beneath piceous or nearly black, sometimes more or less tinged with rufous, shining. Legs rufous or rufo-piceous. Length .16–.18 inch; 4–4.5 mm.

This species seems to lead from *contractum* towards *obtusangulum*, etc. It is rare in collections, but specimens of both sexes have been seen.

It is known to me from Arizona and Oregon. I have also received one example labeled "Nebraska."

90. **B. grandicolle** Lec.—Form moderately elongate, convex; color black, slightly æneous, shining. Head not alutaceous, slightly narrower than the thorax at apex; palpi black; antennæ less than one-half the length of the body, black. Prothorax subquadrate, about one-half wider than long, narrower at base than apex, slightly rugose at base; apex truncate; median line very fine, subentire;

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transverse impressions nearly obsolete; basal impressions deep, bistriate; sides with the margin very narrowly reflexed, strongly arcuate nearly to base, sinuate in front of the hind angles, which are rectangular and carinate. Elytra scarcely wider than the thorax, elongate, oblong-ovate, subparallel, finely striate; striæ very distinctly punctate to behind the middle, the first, second and fifth entire, the latter slightly grooved at tip, the others more or less abbreviated behind; intervals flat, the third with the first dorsal puncture about one-fourth from base, the second about one-fourth from apex. Beneath black, shining. Legs black, the tibiæ and tarsi more or less piceous. Length .18-.20 inch; 4.5-5 mm.

The above description was taken from LeConte's type and one specimen in Dr. Horn's collection. Two others in the LeConte collection agree with it in all respects. Two examples sent to me by Mr. H. C. Fall, from California, differ in having a small, rather ill-defined, submarginal pale spot on the elytra about one-fourth from apex, and the elytra are slightly more deeply striate. In other respects they agree with the description. For the single specimen in my cabinet I am indebted to Mr. Fall.

It is known to me only from California.

91. **B. mormon** n. sp.—Larger and less convex than *grandicolle;* color nigro-æneous, shining, the elytra often with a transverse band of variable length about one-third from base and another about one-third from apex rufous. Head not alutaceous, scarcely as wide as the thorax at apex; palpi piceous; antennæ less than one-half as long as the body, piceous or dark fuscous, the basal joints scarcely paler. Prothorax subquadrate, about one-half wider than long, slightly narrower at base than apex, rugose at base; apex truncate; median line distinct, subentire; anterior transverse impression nearly effaced, the posterior distinct; basal impressions broad, moderately deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, slightly sinuate behind; hind angles subrectangular, carinate. Elytra slightly wider than the thorax, elongate, oblong-ovate, subparallel, moderately deeply striate; striæ entire, distinctly punctate nearly to apex, the fifth slightly grooved at tip; intervals slightly convex, the third with the first dorsal puncture about one-third from base, the second about one-fourth from apex. Beneath black, shining. Legs rufo-piceous, the femora usually piceous. Length .20-.24 inch: 5-6 mm.

Most nearly related to *grandicolle,* but sufficiently distinct by the characters given above. At first sight it recalls *B. scudderi.*

Described from four specimens from the vicinity of Salt Lake, Utah, and one from Sherman, Wyo. I have since writing the above seen one other specimen from Utah and three from California.

92. **B. obtusangulum** Lec.—Form moderately robust; color black, usually distinctly bronzed, rarely tinged with bluish, shining. Head scarcely as wide as the thorax at apex; palpi black; antennæ about one-half the length of the body, black. Prothorax subquadrate, about one-half wider than long, scarcely narrower at base than apex; apex very feebly emarginate; median line fine, usually abbreviated before and behind; transverse impressions moderately distinct; basal

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impressions deep, bistriate, the outer stria small; sides with the margin very narrowly reflexed, arcuate to base: hind angles obtuse, but not rounded, with a short, fine carina. Elytra scarcely wider than the thorax, oblong-ovate, finely striate, more finely towards the sides and apex; striæ entire, finely punctate to behind the middle, the fifth slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-fourth from apex. Body beneath and legs black, slightly æneous, shining. Length .17–.20 inch; 4.25–5 mm.

Most nearly related to *grandicolle* and *mormon*, but abundantly distinct from either by the thorax scarcely narrower at base than apex, with the sides not sinuate behind and the hind angles obtuse, with the angular carina very short. From the former it also differs by the entire elytral striæ.

It occurs from the Rocky Mountain region westward to the Pacific coast, but seems to be local. Specimens are known to me from Wyoming, Colorado, Utah, California and Washington.

93. **B. ephippiger** Lec.—Form slender, elongate, slightly convex. Head and thorax black, scarcely æneous, shining; elytra rufo-testaceous, with usually the scutellar region, a transverse band slightly behind the middle and a shorter one between this and the apex dusky or nearly black, the dark color rarely extending over the entire apical half and along the suture to base. Head rather small, slightly narrower than the thorax at apex; palpi rufous or rufo-piceous; antennæ less than one-half the length of the body, fuscous, the basal joints slightly paler. Prothorax nearly one-half wider than long, subquadrate, as wide at base as apex, slightly rugose at base; apex feebly emarginate; median line fine, abbreviated in front; transverse impressions moderate; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, slightly arcuate in front, rather feebly sinuate behind; hind angles rectangular, finely carinate. Elytra very slightly wider than the thorax, oblong-ovate, subparallel, finely striate; striæ entire, the outer nearly effaced at tip, finely punctate to behind the middle, the fifth slightly grooved at apex; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath nearly black, shining. Legs rufous, the femora sometimes darker. Length .13–.18 inch; 3.25–4.5 mm.

A very pretty species, easily recognizable from its allies. The range of variation has been indicated in the above description.

It occurs from the Rocky Mountain region westward to the Pacific coast, being known to me from Montana, Wyoming, Utah, Arizona and California.

94. **B. rubiginosum** Lec.—Form broad, slightly convex; color piceous or dark brown, with scarcely any æneous lustre, shining. Head nearly as wide as the thorax at apex; palpi piceous; antennæ scarcely one-half as long as the body, piceous, the basal joints slightly paler. Prothorax subquadrate, about one-half wider than long, scarcely narrower at base than apex; apex truncate; median line fine, abbreviated behind; transverse impressions distinct; basal impressions

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moderately deep, bistriate; sides with the margin very narrowly reflexed, feebly arcuate in front, oblique, not sinuate behind; hind angles obtuse, but not rounded, carinate. Elytra distinctly wider than the thorax, oblong-ovate, finely striate, more finely at sides and apex; striæ entire, finely punctate to behind the middle, the fifth grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs rufous. Length .12 inch; 3 mm.

Quite easily recognized by its form, which resembles that of a small *Bradycellus*.

But two specimens are known to me, both from Garland, Col. One of these, LeConte's type, seems slightly immature. The other is in Mr. Bowditch's collection.

95. **B. wickhami** n. sp.—Form rather broad, slightly depressed; color nearly black, slightly æneous, shining, the elytra with a humeral lunule and a transverse band behind the middle yellow, the latter concave backwards and extending nearly to the suture. Head as wide as the thorax at apex; palpi fuscous; antennæ scarcely one-half as long as the body, fuscous, the basal joints testaceous. Prothorax subquadrate, about one-half wider than long, as wide at base as apex; apex nearly truncate; median line fine, abbreviated before and behind; transverse impressions distinct; basal impressions deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, scarcely sinuate behind; hind angles subobtuse, carinate. Elytra about one-half wider than the thorax, oblong-ovate, finely striate; striæ punctate to behind the middle, the outer ones nearly effaced, the first, second and fifth entire, the latter grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, scarcely æneous, shining. Legs testaceous. Length .14–.15 inch; 3.5—3.75 mm.

A very pretty little species, easily distinguishable from the others of the group. It bears a strong resemblance to the species of the next group, from which it may readily be separated by the distinctly striate elytra, with the first, second and fifth striæ entire. From *bifasciatum* (*mundum* Lec.) itself, it differs, in addition, by the form of the thorax, with the basal impressions bistriate. By its markings it also resembles *quadrimaculatum*, but the frontal striæ are single and parallel.

I take great pleasure in dedicating this species to Mr. H. F. Wickham, of Iowa City, to whom I am indebted for the only specimen in my cabinet and for many favors.

Described from one specimen in my own collection from Dunsmuir, Cal., and two in Dr. Horn's, one from Lake County, California, and the other from Nevada. Of these, two are males.

96. **B. constricticolle** n. sp.—Form slender, elongate, slightly depressed; color and markings nearly as in *lucidum*. Head slightly narrower than the thorax

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at apex; palpi fuscous; antennæ about one-half the length of the body, fuscous. Prothorax cordate, about one-half wider than long, scarcely more than one-half as wide at base as apex; apex nearly truncate; median line very fine, abbreviated before and behind; transverse impressions distinct; basal impressions small, deep, unistriate; sides with the margin very narrowly reflexed, arcuate to behind the middle, suddenly and strongly sinuate in front of the hind angles, which are rectangular and carinate. Elytra very slightly wider than the thorax, oblong-ovate, finely striate; striæ entire, punctate to behind the middle, the outer ones very fine at apex, the fifth slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Head and thorax beneath brownish piceous, the abdomen darker. Legs rufous. Length .15–.16 inch; 3.75–4 mm.

A very distinct and curious little species, having considerable resemblance in color and markings to *B. lucidum*. In fact, at first sight, it seems somewhat out of place in the present group, but its characters are, however, such as to place it here.

Described from three specimens, of which one is a male. Of these, two were taken by Mr. F. C. Bowditch and myself in the valley of the San Juan River, N. Mex., and the other at Winslow, Ariz., by Mr. H. F. Wickham. It has also been taken at Colorado Springs, Colo., by Mr. Wickham.

97. **B. scintillans** Bates.—Form slightly elongate, moderately convex. Head and thorax nigro-æneous, shining, with more or less coppery or greenish lustre; elytra testaceous with distinct æneous reflections, and with a subhumeral spot, a small quadrate spot on the third interval in front of the middle, an undulating transverse band behind the middle, attaining the margin, a shorter one between this and the apex, and a line along the suture dusky. Head not dilutaceous, as wide as the thorax at apex; palpi testaceous, darker towards the tip; antennæ about one-half as long as the body, fuscous, the basal joints testaceous. Prothorax subcordate, slightly wider than long, narrower at base than apex; apex nearly truncate; median line fine, extending between the transverse impressions, which are distinct; basal impressions small, deep, single; sides with the margin very narrowly reflexed, arcuate in front, slightly sinuate in front of the hind angles, which are rectangular and finely carinate. Elytra about one-half wider than the thorax, oblong-ovate, deeply striate; striæ entire, finely impressed towards the apex, not closely, but deeply punctate to behind the middle, the fifth grooved at tip; intervals convex, the third with the first dorsal puncture slightly in front of the middle, the second about one-fourth from apex. Beneath nearly black, shining. Legs testaceous. Length .17–.19 inch; 4.25–4.75 mm.

A very pretty species. The elytral markings are often not clearly defined, and are therefore difficult to describe. In some specimens they are connected and so extended that in these the elytra would be better described as with testaceous markings.

In our lists this species is usually associated with *scopulinum, picipes*, etc., but the dorsal punctures are placed on the third interval,

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a character which excludes it from the group to which those species belong.

It occurs in Arizona, and also in Mexico.

98. **B. aratum** Lec.—Form slightly elongate, convex; color nigro-æneous, shining, the elytra with a small, reddish yellow submarginal spot about one-third from apex, and rarely with traces of a transverse fascia, of the same color, about one-third from base. Head not alutaceous, as wide as the thorax at apex; palpi piceous; antennæ about one-half the length of the body, piceous, the first joint slightly paler. Prothorax subcordate, slightly wider than long, narrower at base than apex, more or less finely rugose at base; apex truncate; median line fine, abbreviated before and behind; transverse impressions moderately distinct, especially the posterior, the anterior sometimes feebly marked; basal impressions small, deep, unistriate; sides with the margin very narrowly reflexed, arcuate, sinuate in front of the hind angles, which are rectangular and carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately deeply striate, more finely behind the middle; striæ distinctly punctate nearly to apex, the first, second and seventh entire, the latter grooved at tip; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs nearly black. Length .16-.17 inch; 4-4.25 mm.

At first sight this species recalls *grapii* and certain members of the *ustulatum* group, in which it was formerly placed. The dorsal punctures are, however, distinctly on the third interval. It seems most nearly related to *scintillans* and *dyschirinum*, both of which have also heretofore been placed in the last-named group.

But four specimens are known to me, all from Arizona.

99. **B. morulum** Lec.—Form moderately robust, convex; color black, slightly æneous, shining. Head as wide as the thorax at apex; palpi piceous; antennæ about one-half as long as the body, nearly black, the first joint more or less rufous beneath. Prothorax subquadrate, about one-half wider than long, narrower at base than apex; apex nearly truncate; median line fine, abbreviated before and behind; transverse impressions distinct; basal impressions short, deep, bistriate; sides with the margin very narrowly reflexed, moderately arcuate in front, oblique behind; hind angles obtuse, but not rounded, carinate, the carina short. Elytra slightly wider than the thorax, oblong-oval, moderately finely striate, more finely towards the sides and apex; striæ distinctly punctate to behind the middle, the first, second and fifth entire, the latter slightly grooved at tip, the others abbreviated behind; intervals convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs piceous. Length .11-.13 inch; 2.75-3.25 mm.

The above description was taken from the two specimens in the collection of Mr. Henry Ulke.

At first sight this species recalls members of the *concolor* group, from which, however, it is excluded by the position of the dorsal punctures. It seems, on the whole, best associated with *dyschirinum* and *vile*, from which it may readily be recognized by the subquadrate thorax with the hind angles obtuse.

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To Mr. Ulke and Dr. Horn I am under obligations for an opportunity of examining the only known specimens of this species.

It occurs in the Hudson Bay Territory.

100. **B. dyschirinum** Lec.—Form moderately elongate, convex; color black, distinctly bronzed, shining. Head as wide as the thorax at apex: palpi piceous; antennæ about one-half as long as the body, piceous, the first joint more or less rufous, especially beneath. Prothorax rather more than one-half wider than long, narrower at base than apex, subcordate; apex nearly truncate; median line fine, abbreviated before and behind; transverse impressions moderately distinct; basal impressions broad, deep, obsoletely bistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra slightly wider than the thorax, oblong-ovate, finely striate; striæ distinctly punctate, the first and second entire, the others abbreviated behind, the fifth represented by a slight groove at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, with æneous lustre, shining. Legs rufo-piceous. Length .12–.15 inch; 3–3.75 mm.

Quite an easily recognized species. The surface is usually bronzed, and the elytral striæ are deeply and distinctly, although not closely, punctured, and, as in *vile*, the outer ones are abbreviated behind. As is the case with *scintillans* and *aratum*, it has been heretofore placed with *grapii*, *scopulinum*, etc., and has been removed to the position here assigned it on account of the position of the dorsal punctures.

It occurs along the Pacific coast, extending as far east as Montana. I have also recently received specimens collected by Mr. Wickham at Breckenridge and Leadville, Colo. (9500–10,000 feet).

101. **B. vile** Lec.—Form slightly elongate, moderately convex; color black, scarcely æneous, shining. Head as wide as the thorax at apex; palpi piceous; antennæ about one-half the length of the body, dark piceous or nearly black. Prothorax subcordate, slightly wider than long, narrower at base than apex, sparsely punctulate at base: apex truncate: median line fine, subentire; transverse impressions moderately distinct; basal impressions deep, unistriate: sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles subacute, distinctly carinate. Elytra about one-half wider than the thorax, oblong-oval, finely striate; striæ distinctly punctate to behind the middle, the first and second entire, the fifth represented at apex by a slight groove, the others abbreviated behind; intervals feebly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs dark piceous, or nearly black. Length .10–.11 inch: 2.5–2.75 mm.

One of the smallest species of the genus, quite easily recognized by the above characters.

It is known to me only from California.

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Group xiii. bifasciatum.

Head with the frontal grooves single, parallel; eyes large, prominent. Elytra with the humeri rounded, obsoletely striate, all the striæ abbreviated behind; two dorsal punctures on the third interval.

The above characters will suffice to separate the species of this group from the others of the genus. Two species, both confined to the Pacific coast region, are known to me. They resemble each other very closely in color and markings, and also *quadrimaculatum*, there being two pale yellow spots on each elytron, placed nearly as in that species. They are easily distinguishable from it, however, by the characters given in the definition of the groups, and may thus be separated from each other:

Prothorax subquadrate, about one-half wider than long, scarcely narrower at base than apex, basal impressions bistriate: form depressed; legs piceous, the tibiæ and tarsi slightly paler. Length .13 .15 inch.....**horni** n. sp.

Prothorax subcordate, slightly wider than long, distinctly narrower at base than apex, basal impressions unistriate; form slightly convex; legs pale testaceous. Length .13-.17 inch ...(*mundum* Lec.).....**bifasciatum** Mots.

102. **B. horni** n. sp.—Form broader and less elongate than in *bifasciatum*, depressed; color black, scarcely æneous. the elytra marked nearly as in that species. Head as wide as the thorax at apex; palpi piceous: antennæ about one-half the length of the body, piceous, the first joint rarely slightly paler. Prothorax subquadrate, about one-half wider than long, scarcely narrower at base than apex; apex truncate: median line fine, abbreviated before and behind: transverse impressions moderately distinct; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, slightly sinuate behind; hind angles subrectangular, carinate. Elytra about one-half wider than the thorax, oblong-ovate, striate as in *bifasciatum*; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs piceous, the tibiæ and tarsi slightly paler. Length .13-.15 inch; 3.25-3.75 mm.

Closely allied to *bifasciatum* (*mundum* Lec.), but broader, less elongate and more depressed. It also differs by the form of the thorax, which is broader and less narrowed behind, with the basal impressions bistriate, and by the color of the antennæ and legs. By its markings it recalls both *quadrimaculatum* and *wickhami*.

It is with great pleasure that I assign the name above proposed to this species, not only as a slight token of gratitude for many personal favors, but also as an expression of the deep sense of obligation which I feel, in common with all coleopterists, for the great aid afforded us in our favorite study by the fruitful, untiring labors of Dr. George H. Horn.

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About a dozen specimens in all, of both sexes, have been examined. Of these two are from Arizona, the others from California. For the examples in my cabinet I have to acknowledge my indebtedness to Mr. H. F. Wickham and Mr. Chas. Liebeck.

103. **B. bifasciatum** Mots.—Form slender, elongate, slightly convex; color black or piceous, sometimes tinged with rufous, scarcely æneous, shining, the elytra each with a large post-humeral spot and another submarginal one, behind the middle, pale yellow, the latter often extending transversely nearly to the suture; epipleuræ usually pale. Head as wide as the thorax at apex; palpi testaceous; antennæ about one-half the length of the body, fuscous, the basal joints testaceous. Prothorax subcordate, slightly wider than long, distinctly narrower at base than apex; apex truncate; median line fine, abbreviated in front; transverse impressions moderately distinct, the posterior deeper; basal impressions moderately broad, deep, unistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra rather more than one-half wider than the thorax, oblong-ovate, obsoletely striate, all the striæ abbreviated behind; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Legs pale yellowish testaceous. Length .13–.17 inch; 3.25–4.25 mm.

A very well-marked species. It resembles the preceding more or less closely in color and markings, but is abundantly distinct by the characters given above. The striæ of the elytra are nearly effaced, feeble traces, especially of the inner ones, being seen after careful examination.

The name *bifasciatum* Mots. has about two years priority over that of *mundum* Lec., and must, accordingly, be restored.

It is known to me from California, Oregon and Washington.

Group xiv. quadrimaculatum.

Maxillæ with the outer lobe biarticulate. Frontal grooves double, oblique, the outer interrupted; eyes large, prominent. Prothorax cordate, subpedunculate or pedunculate, the hind angles small. Elytra with the humeri rounded, the striæ abbreviated behind, the first nearly entire; third interval with two dorsal punctures.

The species of this group are small and agree in the above characters. In all but *præcinctum* and *dubitans* the hind angles of the thorax are not carinate, the carina being very fine and short in the two just mentioned. The peduncle at the base of the thorax is very short in most of them, attaining its greatest development in *jucundum*, in which it is well marked.

The six species known to me may thus be separated:

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Hind angles of thorax with a very fine, short carina.

Black, scarcely æneous; elytra finely alutaceous, very finely almost obsoletely striate, the striæ finely punctate; legs dark piceous or black. Length .12-.13 inch ..... **præcinctum** Lec.

Black, more or less æneous; elytra not alutaceous, usually with a subhumeral pale spot, finely striato-punctate; legs piceous or black, the tibiæ and tarsi often paler. Length .11-.15 inch..... **dubitans** Lec.

Hind angles of thorax not carinate.

Form moderately elongate.

Moderately convex, slender; color black, slightly æneous, elytra with a subhumeral pale spot; thorax less than one-half wider than long; legs piceous or nearly black, the tibiæ and tarsi usually paler. Length .12-.14 inch..... **mutatum** G. and H.

Moderately convex; color brownish æneous, the elytra with a subhumeral spot and usually a small submarginal one, behind the middle, yellowish testaceous; thorax scarcely wider than long; legs yellowish testaceous. Length .12-.14 inch..... **pedicellatum** Lec.

Slightly depressed; color varying from brownish to nearly black, slightly æneous, elytra with a large subhumeral spot and a smaller one, behind the middle, yellowish testaceous; thorax rather more than one-half wider than long; legs yellowish testaceous. Length .11.-.15 inch. **quadrimaculatum** Linn.

Broad, moderately robust; head and thorax nearly black, tinged with bluish green, elytra with a broad pale vitta, with irregular sides, between the third and seventh striæ, extending from base to apex; thorax nearly twice as wide as long; legs testaceous. Length .14 inch. **jucundum** Horn.

104. **B. præcinctum** Lec.—Form slightly elongate, feebly convex; color black, scarcely æneous, shining. Head large, slightly wider than the thorax at apex; palpi piceous or nearly black; antennæ about one-half the length of the body, black, the basal joints slightly rufous beneath. Prothorax subcordate, rather more than one-half wider than long, distinctly narrower at base than apex, sparsely punctate at apex; apex truncate; median line very fine, abbreviated before and behind; transverse impressions moderately distinct; basal impressions small, unistriate; sides strongly arcuate, sinuate in front of the hind angles, which are small, subrectangular, with a very short, fine carina. Elytra wider than the thorax, oblong-ovate, finely alutaceous, very finely or nearly obsoletely striate; striæ finely punctulate; intervals flat, the third with the dorsal punctures very small, the first about one-third from base, the second about one-third from apex. Beneath black, shining. Legs dark piceous or black. Length .12-.13 inch; 3-3.25 mm.

It approaches most nearly to *dubitans*, but is distinct by the finely alutaceous elytra, the striæ of which are very fine or nearly obsolete and finely punctulate. There is no trace of the subhumeral pale spot, which is usually present in the latter species, in any specimens that I have seen.

It is known to me from several localities in the more mountainous parts of Colorado, and from Elko, Nevada (Wickham).

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105. **B. dubitans** Lec.—Form moderately elongate, slightly convex; color black, more or less æneous or sometimes tinged with bluish, the elytra usually with a post-humeral spot of variable size reddish yellow, the latter sometimes obscure or entirely wanting, rarely also with a small submarginal one of the same color behind the middle. Head slightly narrower than the thorax; palpi black; antennæ about one-half as long as the body, dark piceous or black. Prothorax cordate, rather more than one-half wider than long, distinctly narrower at base than apex, sparsely punctate at base; apex truncate; median line fine, nearly obsolete; anterior transverse impression distinct, the posterior feeble; basal impressions small, moderately deep, unistriate; sides with the margin narrowly reflexed, arcuate, feebly sinuate in front of the hind angles, which are small and rectangular, with a very short, fine carina. Elytra nearly one-half wider than the thorax, elongate, oblong-ovate, finely striate; striæ punctate; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs dark piceous or nearly black, the tibiæ and tarsi often paler. Length .11–.15 inch; 2.75–3.75 mm.

As above defined this species includes *crurale* Lec. A study of LeConte's types shows that the only difference between *dubitans* and *crurale* consists in the presence of a subhumeral spot in the former, which is lacking in the latter species. In a moderately large series this spot gradually disappears, so that the two species must be united. Dr. LeConte associated it with *affine*, apparently overlooking the fact that the thorax is pedunculated, although to a less degree than in *quadrimaculatum*, and much less so than in *jucundum*, in which this character seems to attain its greatest development.

It is very closely allied to *mutatum*, but may be recognized by the broader thorax, the hind angles of which are small, but distinct, with a very small carina. The form is somewhat more robust. Specimens in which the subhumeral spot is wanting resemble *præcinctum* quite closely, but the elytra are not alutaceous, with the striæ more deeply impressed.

It is known to me from Cheyenne, Wyo., Buena Vista and Garland, Col., Williams, Ariz. (Wickham), Nevada, California, Oregon, Washington, British Columbia and Vancouver Island. I have also seen one specimen from Fort Simpson.

106. **B. mutatum** G. & H.—Form slender, elongate, moderately convex; color black, slightly æneous, the elytra with a yellow or reddish yellow post-humeral spot. Head slightly wider than the thorax at apex; palpi piceous; antennæ about one-half the length of the body, piceous or nearly black, the basal joints more or less rufous, especially beneath. Prothorax cordate, scarcely one-half wider than long, very distinctly narrower at base than apex, sparsely punctate at base; apex feebly emarginate; median line fine, abbreviated before and behind; anterior transverse impression nearly obsolete, the posterior feeble; basal impressions small, unistriate; sides with the margin very narrowly reflexed,

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arcuate in front, feebly sinuate behind; hind angles very small, scarcely evident, not carinate. Elytra distinctly wider than the thorax, elongate, nearly elliptical, finely striate; striæ distinctly punctate; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs piceous or nearly black, the tibiæ and tarsi usually paler. Length .12–.14 inch; 3–3.5 mm.

Closely allied to *dubitans*, but distinct by the characters above given. It is also related to *quadrimaculatum*, but is more slender and more convex. It differs also in color and in the color of the legs. It is often confused with *dubitans* in collections.

It occurs in the Hudson Bay Territory, New Hampshire (Mt. Washington), the Lake Superior region and in the more mountainous parts of Colorado.

107. **B. pedicellatum** Lec.—Form elongate, moderately convex; color æneous or æneo-piceous, shining, the elytra with a subhumeral spot and usually a submarginal one about one-third from apex, yellow. Head large, scarcely narrower than the thorax; palpi rufous; antennæ rather more than one-half the length of the body, fuscous, the basal joints testaceous. Prothorax cordate, scarcely wider than long, nearly one-half narrower at base than apex; apex truncate; median line fine, abbreviated before and behind; transverse impressions feeble; basal impressions very small, unistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles very small and scarcely evident, subrectangular, not carinate. Elytra distinctly wider than the thorax, oblong-ovate, finely striate; striæ very distinctly, not closely punctate; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs pale yellowish testaceous. Length .12–.15 inch; 3–3.75 mm.

This species is most nearly related to *quadrimaculatum*, but is more convex, with the thorax more elongate, and the elytra shorter with the punctures of the striæ larger and less closely placed. The elytral spots are much smaller and less conspicuous.

It is known to me from Pennsylvania, the District of Columbia, Maryland and Missouri.

108. **B. quadrimaculatum** Linn.—Form moderately elongate, slightly depressed. Head and thorax æneous, or nigro-æneous, shining; elytra varying from brownish to nearly black, more or less æneous, shining, with a large, triangular post-humeral spot yellow and another smaller one, of the same color, near the margin, about one-third from apex, extending more or less transversely towards the suture. Head large, wider than the thorax at apex; palpi fuscous, darker towards the tip; antennæ about one-half the length of the body, piceous, the basal joints testaceous. Prothorax cordate, more than one-half wider than long, distinctly narrower at base than apex, sparsely punctate at base, the disc feebly convex; apex truncate; median line fine, extending between the transverse impressions, which are moderately distinct; basal impressions small and close to the angle, unistriate; sides with the margin very narrowly reflexed,

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strongly arcuate, sinuate in front of the hind angles, which are small and scarcely evident, rectangular, not carinate. Elytra distinctly wider than the thorax, oblong-ovate, finely striate; striæ finely punctate; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs testaceous. Length .11–.15 inch; 2.75–3.75 mm.

One of our best marked, as well as one of our most abundant, species. In color it resembles *bifasciatum*, *horni* and *wickhami*, but is at once recognizable from all of them by the arrangement of the frontal striæ, the form of the thorax, and the striation of the elytra. It is most nearly allied to *pedicellatum* and *mutatum*, but may be distinguished by the characters above given. It is subject to but slight variation.

It occurs throughout the greater part of North America east of the Rocky Mountains, in Europe and in Siberia.

109. **B. jucundum** Horn.—Form broad, moderately convex. Head and thorax black, tinged with bluish green, shining; elytra piceous, with a broad, nearly white vitta, with irregular sides, between the third and seventh striæ, extending from the base nearly or quite to the apex. Head as wide as the thorax at apex; palpi testaceous; antennæ about one-half as long as the body, testaceous, the outer joints slightly darker. Prothorax cordate, nearly twice as wide as long, narrower at base than apex; apex truncate; median line very fine, abbreviated in front; anterior transverse impression distinct, the posterior obsolete; basal impressions very small, single; sides with the margin narrowly reflexed, moderately strongly arcuate; hind angles small, scarcely evident, very obtuse, but not rounded, not carinate. Elytra distinctly wider than the thorax, oblong-ovate, finely striate; striæ distinctly, but not very closely punctate; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex, the punctures placed near the third stria. Beneath black, slightly æneous, shining. Legs testaceous. Length .14 inch; 3.5 mm.

An extremely pretty species, very distinct from any in our fauna. In Dr. Horn's type the longitudinal vitta extends the entire length of the elytra. In the only other specimen that I have seen, which is from Arizona and also in Dr. Horn's cabinet, it does not quite attain the apex, and the elytral striæ are slightly more deeply impressed. The two agree in other respects.

In this species the peduncle at the base of the thorax seems to attain its greatest development.

It occurs in Arizona and Lower California.

Group xv. affine.

Maxillæ with the outer lobe biarticulate; eyes large, prominent. Frontal grooves slightly oblique, the outer interrupted. Thorax cordate or subcordate, truncate at base. Elytra with the humeri rounded; two dorsal punctures on the third interval.

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As above defined this group contains but two species, which may thus be distinguished:

Black, slightly æneous; thorax cordate, slightly wider than long, very distinctly narrower at base than apex, basal impressions unistriate; elytra more than one-half wider than the thorax, variegated with testaceous markings along the margin; legs testaceous. Length .10-.14 inch.....**affine** Say.

Piceous or nearly black, the elytra sometimes tinged with brown, unicolorous; thorax about one-half wider than long, subcordate, slightly narrower at base than apex, basal impressions bistriate; elytra slightly wider than the thorax; legs rufo-testaceous. Length .10-.13 inch....**muscicola** n. sp.

110. **B. affine** Say.—Form slightly elongate, convex; color nearly black, slightly æneous, shining, the elytra with a small basal spot near the humerus, a large triangular submarginal one about the middle, a smaller one about one-fourth from apex and often the apex testaceous. Head scarcely narrower than the thorax; palpi rufo-testaceous, darker towards the tip; antennæ rather more than one-half as long as the body, dark fuscous, the basal joints testaceous. Prothorax cordate, slightly wider than long, very distinctly narrower at base than apex; apex truncate; median line very fine, abbreviated in front; transverse impressions moderately distinct; basal impressions small, moderately deep, unistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, very finely carinate. Elytra more than one-half wider than the thorax, oblong-oval, moderately deeply striate; striæ very distinctly punctate, the first and second only entire, the fifth represented by a groove at tip; intervals slightly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs testaceous. Length 10-.14 inch; 2.5-3.5 mm.

A very pretty little species, easily recognizable from the others of the genus. In color it resembles some forms of *versicolor*, but may be at once distinguished by the arrangement of the frontal grooves. In this it agrees with the next species, but is very distinct by the characters given above, as well as by its different facies.

It occurs along the Atlantic coast from New England to Florida, in the Middle States, Ohio, Michigan, the Lake Superior region, Iowa, Missouri, Mississippi, Texas and Arizona. I have not known of its occurrence on the Pacific coast.

111. **B. muscicola** n. sp.—Form slightly elongate, convex; color varying from nearly black to piceous, the elytra sometimes tinged with brown. Head as wide as the thorax at apex; palpi rufo-piceous; antennæ about one-half the length of the body, fuscous, the basal joints rufous. Prothorax subcordate, about one-half wider than long, narrower at base than apex; apex truncate; median line distinct, abbreviated before and behind; anterior transverse impression rather feeble, the posterior distinct; basal impressions moderately deep, bistriate; sides with the margin very narrowly reflexed, arcuate, slightly sinuate in front of the hind angles, which are subrectangular and finely carinate. Elytra slightly wider than the thorax, oblong-oval, moderately finely striate, more finely towards the sides and tip; striæ punctate to behind the middle, the first and second only entire,

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the fifth represented by a groove at apex; intervals slightly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black or dark piceous, shining. Legs rufo-testaceous. Length .10-.13 inch; 2.5-3.25 mm.

This species appears in American literature as *lampros* Herbst. This determination is erroneous, as is shown by an examination of authentic specimens of that species received from Mr. G. C. Champion, of London, by the Museum of Comparative Zoölogy at Cambridge.

It having been determined as *lampros* by the late Mr. H. W. Bates, it seemed quite possible that that name might have been sent by him, by mistake, instead of that of some other European species. A specimen was accordingly sent by me to Mr. Champion, who has kindly studied it, and who informs me that it is distinct from any European species known to him, being "nearest allied to *B.* (*Lopha*) *shuppelli* Dej."

It is easily recognizable from the preceding by its broader thorax, which is much less strongly narrowed behind, with the basal impressions bistriate. The elytra also differ in being but slightly wider than the thorax and unicolorous.

Mr. W. H. Harrington informs me that he has taken it in moderate abundance by moss sifting.

It is known to me from Ottawa, Canada (Harrington), the White Mountains of New Hampshire, Massachusetts (Cambridge, Lowell), Rhode Island, Michigan and northern Illinois, and I have seen two specimens labeled "California."

Group xvi. **sulcatum.**

Maxillæ with the outer lobe biarticulate. Frontal grooves double, scarcely converging, the outer entire; eyes large and prominent. Elytra with the humeri rounded; dorsal punctures two, situated on the third interval.

The following is the only species known to me:

112. **B. sulcatum** Lec.—Form slightly elongate, moderately convex; color black, shining, often tinged with greenish, the elytra usually with a submarginal spot about one-fourth from apex, and the apex testaceous. Head as wide as the thorax at apex; palpi rufo-piceous; antennæ about one-half the length of the body, rufo-piceous, the basal joints paler. Prothorax subquadrate, rather more than one-half wider than long, slightly narrower at base than apex; apex nearly truncate; median line distinct, subentire; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, arcuate to behind the middle, slightly sinuate in front of the hind angles, which are rectangular and carinate. Elytra distinctly wider than the thorax, oblong-

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oval, moderately finely striate; striæ punctate to behind the middle, the first and second nearly entire, the fifth represented by a slight groove at tip; intervals flat or nearly so, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs rufo-testaceous. Length .13–.14 inch; 3.25-3.5 mm.

A very well-marked species, easily recognizable by the arrangement of the frontal grooves.

It is known to me from Canada, the Hudson Bay Territory, near Lowell, Mass. (Blanchard), Michigan, the Lake Superior region and Illinois.

Group xvii. **assimile.**

Head with the frontal grooves very deep, strongly convergent, double, the inner groove long, the outer shorter and often feebly marked; eyes large and prominent. Prothorax cordate or subcordate, truncate at base, the hind angles carinate. Elytra with the striæ abbreviated behind, the first and second nearly entire, the fifth represented by a slight groove at tip; dorsal punctures two, situated on the third interval.

The members of this group are quite easily recognizable by the strongly convergent frontal grooves, the outer of which is usually much shorter and less deep than the inner and often inconspicuous. It is best marked in *B. assimile*. When we come to the definition of the species, however, we find the task much more difficult. They resemble each other closely, and are often difficult to separate. It is hoped that the following table will afford some assistance:

Thorax distinctly wider than long; elytra about one-half wider than the thorax.

Hind angles of thorax acute, basal impressions unistriate; form slightly elongate, convex; color black, scarcely æneous, the elytra usually finely striato-punctate, with a subapical spot and the apex more or less testaceous; legs varying from piceous to rufous. Length .13–.16 inch. **anguliferum** Lec.

Hind angles of thorax rectangular.

More elongate and less convex than *anguliferum*; elytra deeply striate, without paler markings; basal impressions of thorax bistriate; legs black. Length .14–.17 inch ..... **acutifrons** Lec.

Less elongate, convex; color black, scarcely æneous, elytra often piceous, with a subapical spot and the apex pale, moderately deeply striato-punctate; basal impressions of thorax bistriate; legs rufous or rufo-piceous. Length .12–.15 inch ..... **cautum** Lec.

Scarcely convex; color nearly as in *cautum*, the elytral markings often wanting; basal impressions of thorax unistriate; elytra rather more finely striate; legs varying from rufous to piceous. Length .12–.14 inch. **connivens** Lec.

Thorax scarcely wider than long, hind angles rectangular; form convex; color nigro-æneous, the elytra often brownish, deeply striato-punctate, with a subapical spot and the apex pale; legs testaceous. Length .08–.11 inch. **assimile** Gyll

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113. **B. anguliferum** Lec.—Form slightly elongate, convex; color black, scarcely æneous, shining, the elytra with a submarginal spot about one-fourth from apex and the apex more or less testaceous. Head as wide, or slightly wider than the thorax at apex; palpi piceous or rufo-piceous; antennæ about one-half the length of the body, piceous, the first joint often paler. Prothorax distinctly wider than long, much narrower at base than apex; apex truncate; median line fine, abbreviated at each end; transverse impressions moderately distinct: basal impressions deep, unistriate; sides with the margin narrowly reflexed, arcuate in front, sinuate behind; hind angles acute. Elytra oblong-ovate, about one-half wider than the thorax, usually finely striate, especially towards the sides; striæ punctate; intervals nearly flat, the third with the first dorsal puncture about one-fourth from base, the second about one-third from apex. Beneath black, shining. Legs varying from piceous to rufous. Length .13-.16 inch; 3.25-4 mm.

Most nearly allied to *cautum*. It differs, however, in having the basal impressions of the thorax unistriate and the hind angles acute, and the form is rather more elongate. The elytra are usually much more finely striate. This character varies greatly, however, so that we have every gradation from typical specimens, in which they are very finely striate, to those in which the striæ are as deep as in the last-named species. The convexity of the intervals also varies with the depth of the striæ, these being nearly flat in typical examples.

It is known to me from Canada, New Hampshire, Massachusetts, New Jersey, Michigan, Manitoba, Nevada, California and Vancouver Island. I have seen one specimen labeled "Florida."

114. **B. acutifrons** Lec.—More elongate and less convex than *anguliferum*; color black, scarcely æneous, shining, the elytra without paler markings. Head scarcely narrower than the thorax at apex; palpi black; antennæ about one-half as long as the body, black. Prothorax about one-half wider than long, distinctly narrower at base than apex; apex truncate; median line distinct, entire; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular. Elytra about one-half wider than the thorax, oblong-ovate, moderately deeply striato-punctate; intervals feebly convex, the third with the first dorsal puncture about one-fourth from base, the second about one-third from apex. Beneath black, shining. Legs black. Length .14-.17 inch; 3.5-4.25 mm.

This species is most nearly related to the preceding. The form is more elongate and less convex. The thorax is slightly broader as compared with its length, with the sides slightly less deeply sinuate behind, the basal impressions bistriate and the hind angles rectangular. The elytra are more deeply striate than in typical specimens of *anguliferum*, and the subapical and apical pale spots are wanting. The legs also differ in color.

It was described by Dr. LeConte from Alamosa, Colo. It is known to me also from La Veta in the same State, Utah Lake, Utah and Washington.

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115. **B. cautum** Lec.—Form moderately robust; color black, scarcely æneous, shining, the elytra sometimes tinged with brownish, with a submarginal spot about one-fourth from apex and the apex pale. Head as wide as the thorax at apex; palpi piceous; antennæ about one-half the length of the body, piceous, slightly paler at base. Prothorax about one-half wider than long, narrower at base than apex, sparsely punctate at base; apex truncate; median line fine, abbreviated in front; transverse impressions distinct; basal impressions broad, deep, bistriate; sides with the margin very narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular. Elytra about one-half wider than the thorax, oblong-ovate, moderately deeply striate; striæ distinctly punctate; intervals slightly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs varying from rufous to piceous. Length .12-.15 inch; 3-3.75 mm.

Distinct from *anguliferum* by its somewhat broader, less elongate form and rectangular hind angles of the thorax, the basal impressions of which are bistriate. The elytra are more deeply striate than in average specimens of the latter species, and the thorax is slightly broader as compared with its length and somewhat less narrowed behind. The pale markings of the elytra, especially the submarginal spot, are usually more clearly defined than in *anguliferum*, though sometimes obscure, or even nearly effaced, as in some examples of *connivens*.

It is rather feebly separable from the latter species by its more convex form and by the bistriate basal impressions of the thorax.

It occurs in the Rocky Mountain region, Utah, Washington, Idaho, at Ft. Wrangel, Alaska (Wickham) and in the east in Michigan (Hubbard and Schwarz) and at Brookline, Mass. (Bowditch).

116. **B. connivens** Lec.—Form less convex than in *cautum*, which it resembles in color. Head as wide as the thorax at apex; palpi piceous or rufopiceous; antennæ about one-half the length of the body, piceous, the first joint often rufous. Prothorax about one-half wider than long, narrower at base than apex; median line fine, abbreviated in front; transverse impressions moderately distinct; basal impressions deep, unistriate; sides with the margin narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular Elytra about one-half wider than the thorax, oblong-ovate, moderately finely striate; striæ distinctly punctate; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, shining. Legs varying from rufous to piceous. Length .12-.14 inch; 3 3.5 mm.

Very closely allied to the preceding, from which it is but feebly dis inct by its more depressed form and by the unistriate basal impressions of the thorax. The elytra are somewhat more finely striate, and the pale markings near the apex are more frequently obscure than is the case in *B. cautum*, and, in fact, in some examples are entirely effaced.

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It seems to be confined to the Pacific coast region, being known to me from various localities in California, Oregon, Washington and Vancouver Island.

117. **B. assimile** Gyll.—Form moderately robust; color black, scarcely æneous, the elytra usually piceous or brownish, with a very distinct submarginal spot about one-fourth from apex and the apex pale. Head scarcely narrower than the thorax; palpi testaceous, darker towards the tip; antennæ about one-half the length of the body, fuscous, the basal joints testaceous. Prothorax very slightly wider than long, distinctly narrower at base than apex, sparsely punctate at base; apex truncate; median line fine, abbreviated in front; anterior transverse impression distinct, the posterior feeble; basal impressions deep, unistriate; sides with the margin very narrowly reflexed, strongly arcuate in front, distinctly sinuate behind; hind angles rectangular. Elytra oblong-oval, nearly twice as wide as the thorax, moderately deeply striate; striæ very distinctly punctate; intervals slightly convex, the third with the first dorsal puncture about one-fourth from base, the second slightly behind the middle. Beneath nearly black, shining, the abdomen often piceous. Legs testaceous. Length .08–.11 inch; 2–2.75 mm.

This is the smallest species of the group and one of the smallest of the entire genus. It seems subject to but slight variation, and may be easily recognized from its allies by the above characters. The outer frontal groove is more clearly marked in this than in any other species of the group.

Its range of distribution is very extended. It occurs throughout a large part of Europe, and in North America is known to me from Canada, Massachusetts, Rhode Island, New York, Pennsylvania, Virginia, Michigan and the Lake Superior region, Illinois, Iowa, Missouri, Idaho, California, Oregon and Washington.

Group xviii. semistriatum.

Maxillæ with the outer lobe biarticulate; frontal grooves single, straight, parallel; eyes moderately large, prominent. Prothorax subcordate. Elytra with the striæ abbreviated behind; intervals with irregular rows of sparsely placed setigerous punctures; humeri rounded.

This group contains but one species.

118. **B. semistriatum** Hald.—Form slightly elongate, convex; color nearly black, scarcely æneous, the elytra often somewhat tinged with brownish. Head scarcely narrower than the thorax at apex; palpi testaceous; antennæ about one-half the length of the body, piceous, the basal joints paler. Prothorax about one-half wider than long, very distinctly narrower at base than apex; apex truncate; median line distinct, abbreviated in front; transverse impressions moderately distinct; basal impressions deep, bistriate; sides with the margin very narrowly reflexed, strongly arcuate in front, sinuate behind; hind angles rect-

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angular or subacute, carinate. Elytra about one-half wider than the thorax, oblong-ovate, finely striate; striæ entirely obliterated behind, with deep, not closely placed punctures; intervals flat. Beneath black, shining. Legs yellowish testaceous. Length .15–.17 inch; 3.75–4.25 mm.

A very well-marked species. It recalls *lævigatum* by the arrangement of the dorsal punctures. The setæ arising from them are very distinct in well preserved specimens.

It occurs in the eastern portions of the country, being known to me from New Hampshire, Massachusetts, Pennsylvania and Kentucky. In the LeConte collection there is one specimen labeled "Southern States."

Group xix. iridescens.

Maxillæ with the outer lobe biarticulate; frontal grooves single, straight, parallel; eyes large, prominent. Thorax trapezoidal. Elytra with the humeri rounded, the humeral line hamate, uniting with the fifth stria, which is entire; dorsal punctures two, placed on the third interval near the third stria.

But two species are included in this group. They bear some resemblance to *Trechus*, and may thus be separated:

Elongate, depressed; piceous or nearly black, slightly iridescent; thorax slightly wider than long, scarcely narrower at base than apex; elytra finely striate. Length .21–.22 inch..... **trechiforme** Lec.

Broader; bluish black, iridescent, the elytra more or less rufescent at tip, rather more deeply striate; thorax about one-half wider than long, as wide at base as apex. Length .15–.18 inch..... **iridescens** Lec.

119. **B. trechiforme** Lec.—Form slightly elongate, depressed; color nearly black or piceous, more or less iridescent, shining. Head scarcely narrower than the thorax at apex; palpi rufo-testaceous, darker at tip; antennæ more than one-half as long as the body, fuscous, the basal joints yellowish testaceous. Prothorax trapezoidal, slightly wider than long, scarcely narrower at base than apex, sparsely punctate at base; apex slightly emarginate; median line fine, subentire; transverse impressions nearly obsolete; basal impressions broad, deep, bistriate; sides with the margin distinctly reflexed, arcuate to behind the middle, slightly sinuate in front of the hind angles, which are rectangular, carinate. Elytra distinctly wider than the thorax, oblong-oval, finely striate, more finely at sides and tip; striæ impunctate or obsoletely punctulate, the five inner entire, the fifth slightly grooved at tip; intervals flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath nearly black, shining, the abdomen sometimes tinged with rufous. Legs yellowish testaceous. Length .21–.22 inch; 5.25–5.5 mm.

Larger and more elongate than *iridescens*, with the thorax narrower as compared with its length, scarcely narrower at base than apex, and the elytra unicolorous.

It is known to me from California and Washington (Spokane Falls).

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120. **B. iridescens** Lec.—Smaller and broader than *trechiforme:* color bluish black, iridescent, shining, the elytra usually rufescent at apex. Head as wide as the thorax at apex; palpi rufous, darker towards the tip: antennæ about one-half as long as the body, piceous, the first joint rufous, as are often also the second and third at base. Prothorax trapezoidal, about one-half wider than long, as wide at base as apex, sparsely punctate at base; apex slightly emarginate: median line distinct, subentire or abbreviated in front: transverse impressions moderately distinct; basal impressions broad, deep, bistriate; sides with the margin distinctly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra about one-half wider than the thorax, oblong-ovate, moderately finely striate, more finely at sides and tip; striæ obsoletely punctulate, the five inner entire, the fifth grooved at apex; intervals nearly flat, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Beneath black, sometimes slightly æneous, shining. Legs yellowish testaceous. Length .15–.18 inch; 3.75–4.5 mm.

More abundant than the preceding, from which it may be distinguished by the above characters.

It occurs in Utah, Montana, Idaho, Nevada, California, Oregon, Washington and Vancouver Island.

Group xx. laticeps.

Mandibles moderately stout, slightly arcuate. Maxillæ with the outer lobe distinctly biarticulate; frontal striæ single, moderately deep, parallel; eyes small, flattened. Elytra with the humeri rounded; two dorsal punctures on the third stria.

The above-mentioned characters are sufficient for the definition of this group, which is the equivalent of the genus *Lymnæum*. The species agree with those of the next in having the eyes small and flattened, but are distinct by the form of the mandibles, the biarticulate outer lobe of the maxillæ, and the position of the dorsal punctures of the elytra.

But two species are known to me, both very rare in collections. They may be thus defined:

Thorax about one-half wider than long, basal impressions moderately deep: elytra oblong-ovate, slightly wider than the thorax, deeply striate, the striæ entire. Length .16–.17 inch..... **puritanum** n. sp.

Thorax slightly wider than long, basal impressions very shallow; elytra nearly elliptical, scarcely wider than the thorax, finely striate, the outer striæ indistinct, the first, second and fifth entire, the others more or less effaced at tip. Length .14–.16 inch..... **laticeps** Lec.

121. **B. puritanum** n. sp.—Form elongate, depressed; color dark rufous, the elytra varying to slate color with a narrow line along the suture rufous. Head large, as wide as the thorax at apex: palpi rufous; antennæ about one-half as long as the body, rufous. Prothorax subtrapezoidal, about one-half wider than long, very distinctly narrower at base than apex; apex truncate; median line

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deep, abbreviated behind; transverse impressions distinct; basal impressions moderately broad, obsoletely bistriate; sides with the margin narrowly reflexed, arcuate in front, sinuate behind; hind angles rectangular, carinate. Elytra slightly wider than the thorax, oblong-ovate, deeply striate; striæ entire, impunctate, the fifth slightly grooved at tip; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex, the punctures very small; intervals convex. Body beneath and legs rufous. Length .16–.17 inch; 4–4.25 mm.

Distinct from *laticeps* by the characters given above.

In the four specimens known to me the third and fourth striæ unite at the position of the first dorsal puncture, but are distinct from thence to apex. Of these one is in Dr. Horn's collection, two in the LeConte collection at Cambridge, and the other in my own cabinet.

It occurs in Massachusetts.

122. **B. laticeps** Lec.—Form elongate, depressed; color dark rufous. Head large, as wide as the thorax; palpi rufo-piceous; antennæ scarcely one-half the length of the body, rufo-piceous. Prothorax trapezoidal, slightly wider than long, distinctly narrower at base than apex; apex feebly emarginate; median line fine, abbreviated before and behind; transverse impressions moderately distinct; basal impressions very shallow, unistriate; sides with the margin narrowly reflexed, arcuate, slightly sinuate in front of the hind angles, which are rectangular, not carinate. Elytra nearly elliptical, scarcely wider than the thorax, finely striate, the outer striæ indistinct; striæ impunctate, the first, second and fifth entire, the latter grooved at tip, the others more or less effaced at apex; third stria with the first dorsal puncture about one-third from base, the second about one-third from apex; intervals feebly convex. Body beneath and legs dark rufous. Length .14–.16 inch; 3.5–4 mm.

A very curious and well-marked species.

I have seen but two specimens, Dr. LeConte's type from San Diego, Cal., and one specimen, also from California, in Dr. Horn's cabinet.

Group xxi. oblongulum.

Mandibles long, slender, nearly straight, feebly arcuate at tip. Maxillæ with the outer lobe with the two joints united; frontal grooves single, straight, parallel; eyes small, flattened. Elytra with the humeri rounded; third interval with two dorsal punctures.

This group is the equivalent of *Amerizus* Chaud., which, as previously stated, was erected for the reception of *spectabile*, being based upon the peculiar structure of the outer lobe of the maxillæ. This character is also possessed by *oblongulum*, a species referred by Chaudoir to *Lymnæum*. Both bear considerable resemblance to *Trechus*, in which genus they were originally placed by Mannerheim They may be distinguished by the following characters:

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Feebly convex: rufous or rufo-piceous; thorax slightly wider than long, distinctly narrower at base than apex, hind angles rectangular; striæ of the elytra sparsely and very finely punctate. Length .17-.22 inch.

oblongulum Mann.

Larger; moderately convex; dark piceous or nearly black; thorax distinctly wider than long, scarcely narrower at base than apex, hind angles subacute; striæ of the elytra obsoletely punctate. Length .23-.24 inch.

spectabile Mann.

123. **B. oblongulum** Mann.—Form elongate, feebly convex: color rufous or rufo-piceous, shining. Head slightly narrower than the thorax at apex; palpi rufous: antennæ about one-half the length of the body, rufous. Prothorax trapezoidal, slightly wider than long, distinctly narrower at base than apex, sparsely punctate at base; apex slightly emarginate; median line deep, entire; anterior transverse impression rather feeble, the posterior distinct; basal impressions broad, moderately deep, bistriate; sides with the margin narrowly reflexed, slightly arcuate in front, sinuate behind; hind angles rectangular, very finely carinate. Elytra slightly wider than the thorax, oblong-ovate, moderately deeply striate, more finely towards the sides; striæ entire, sparsely, very finely punctate, the fifth slightly grooved at tip; intervals slightly convex, the third with the first dorsal puncture about one-third from base, the second about one-third from apex. Body beneath and legs rufous. Length .17-.22 inch; 4.25-5.5 mm.

Distinct from *spectabile* by its proportionally longer thorax, which is more narrowed behind, with the hind angles rectangular, as well as by its more elongate, less convex form, different color and smaller size.

Its range of distribution is extended. I have seen specimens from Canada, Portland, Me. (Blanchard), Vermont, the White Mountains of New Hampshire, Massachusetts (Lowell), Ohio, Michigan, Alaska, California and Mexico.

124. **B. spectabile** Mann.—Form elongate, moderately convex; color dark piceous, nearly black, shining. Head scarcely narrower than the thorax at apex; palpi rufo-piceous; antennæ rather more than one-half the length of the body, rufo-piceous. Prothorax trapezoidal, distinctly wider than long, scarcely narrower at base than apex, sparsely punctate at base; apex slightly emarginate; median line deep, abbreviated in front; transverse impressions moderately distinct; basal impressions broad, moderately deep, bistriate; sides with the margin narrowly, but distinctly reflexed, arcuate in front, sinuate behind; hind angles subacute, finely carinate. Elytra oblong-oval, distinctly wider than the thorax, moderately deeply striate; striæ entire, obsoletely punctate, the fifth slightly grooved at tip; intervals convex, the third with the first dorsal puncture slightly in front of the middle, the second about one-third from apex. Beneath piceous, the abdomen sometimes tinged with rufous. Legs rufo-piceous. Length .23-.24 inch; 5.75-6 mm.

A very rare species of which I have seen but two examples, one each in the LeConte collection and in that of Dr. Horn. It is distinguishable from the preceding by the characters given above.

It is known to me only from Alaska and Vancouver Island.

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Bibliography and Synonymy.

Group i.

1. **B. lævigatum** Say, Trans. Am. Phil. Soc., 1823, ii, p. 84: ibid. 1834, iv, p. 436; Ed. Lec., ii, pp. 499 and 550; Dej., Spec., 1831, v, p. 150; Lec., Ann. Lyc., 1848, iv, p. 453 (*Hydrium*).

Group ii.

2. **B. nitidum** Kirby, Faun. Bor. Am., 1837, iv, p. 55, tab. i, fig. 7 (*Peryphus*); Ed. Can. Ent., ii, p. 171; Lec., Ann. Lyc., 1848, iv, p. 468 (*Ochthedromus*).
   obliquulum Lec., Proc. Ac. Phil., 1859, p. 83.
   aptum Lec., ibid. p. 281.
3. **B. erasum** Lec., Proc. Ac. Phil., 1859, p. 83.

Group iii.

4. **B. inæquale** Say, Journ. Ac. Phil., 1823, ser. 1, iii, p. 151; Proc. Am. Phil. Soc., 1834, iv, p. 436; Ed. Lec., ii, pp. 97 and 549; Lec., Ann. Lyc., 1848, iv, p. 452.
   arenarium Dej., Spec., 1831, v, p. 80.
5. **B. littorale** Oliv., Ent., 1790, ii, p. 6, pl. i, fig. 7*ab*.
   paludosum Sturm., Deutz., Faun. Ins., 1825, vi, p. 179; Duval, Ann. Soc. Ent. France, 1851, ser. 2, ix, p. 473; Lec., Ann. Lyc., 1848, iv, p. 451; Proc. Ac. Phil., 1861, p. 340.
   elegans Germ., Ins. spec. nov., 1824, p. 27.
   lacustre Lec., Ann. Lyc., 1848, iv, p. 451.
6. **B. carinula** Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 239.
   impressum ‡ Kirby, Faun. Bor. Am., 1837, iv, p. 59; Ed. Can. Ent. ii, p. 173; Lec., Ann. Lyc., 1848, iv, p. 451.
7. **B. lorquini** Chaud., Rev. et. Mag. Zool., 1868, ser. 2. xx, p. 239.
8. **B. punctatostriatum** Say, Trans. Am. Phil. Soc., 1823, ii, p. 83; ibid. 1834, iv, p. 436; Ed. Lec., ii, pp. 498 and 550.
   sigillare Say, Trans. Am. Phil. Soc., 1834, iv, p. 437; Ed. Lec., ii, p. 551; Lec., Ann. Lyc., 1848, iv, p. 451.
   stigmaticum Dej., Spec., 1831, v, p. 83.

Group iv.

9. **B. carinatum** Lec., Ann. Lyc., 1852, v, p. 186.
10. **B. sculpturatum** Mots., Bull. Mosc., 1859, xxxii, p. 132, pl. 3, fig. 2.
11. **B. robusticolle** n. sp.
12. **B. bowditchi** Lec., Bull. U. S. Geol. and Geog. Surv., 1878, iv, p. 451.
13. **B. coxendix** Say, Journ. Ac. Phil., 1823, ser. 1, iii, p. 151; Ed. Lec., ii, p. 97; Lec., Ann. Lyc., 1848, iv, p. 452.
14. **B. confusum** Nobis.
   nitidulum || Dej., Spec., 1831, v, p. 84; Lec., Ann. Lyc., 1848, iv, p. 452.
   coxendix ‡ Say, Trans. Am. Phil. Soc., 1834, iv, p. 436; Ed. Lec., ii, p. 550.

Group v.

15. **B. bifossulatum** Lec., Ann. Lyc., 1852, v, p. 186 (*Ochthedromus*).
16. **B. americanum** Dej., Spec., 1831, v, p. 84; Lec., Ann. Lyc., 1848, iv, p. 453 (*Ochthedromus*).

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17. **B. dilatatum** Lec., Ann. Lyc., 1848, iv, p. 455 (*Ochthedromus*).
18. **B. honestum** Say, Trans. Am. Phil. Soc., 1823, ii. p. 82; ibid. 1834, iv. p. 436; Ed. Lec., ii, pp. 498 and 550.
antiquum Dej., Spec., 1831, v. p. 88; Lec., Ann. Lyc., 1848, iv, p. 455 (*Ochthedromus*).
basale Lec., ibid. p. 454 (*Ochthedromus*).
19. **B. chalceum** Dej., Spec., 1831, v, p. 89; Lec., Ann. Lyc., 1848, p. 455 (*Ochthedromus*).
20. **B. blanchardi** n. sp.

Group vi.

21. **B. nigrum** Say, Trans. Am. Phil. Soc., 1823, ii, p. 85; ibid. 1834, iv, 437; Ed. Lec., ii, pp. 500 and 551; Dej., Spec., 1831, v, p. 151; Lec., Ann. Lyc., 1848, iv, p. 458 (*Ochthedromus*).
22. **B. brevistriatum** n. sp.
23. **B. longulum** Lec., Ann. Lyc., 1848, iv, p. 456 (*Ochthedromus*); Agass. Lake Sup., 1850, p. 211.
subæneum Lec., Ann. Lyc., 1848, iv, p. 457 (*Ochthedromus*).
24. **B. quadrulum** Lec., Proc. Ac. Phil., 1861, p. 340.
25. **B. concolor** Kirby, Faun. Bor. Am., 1837, iv, p. 54 (*Peryphus*); Ed. Can. Ent., ii, p. 171.
salebratum Lec., Ann. Lyc., 1848, iv, p. 453 (*Ochthedromus*).
purpurascens Lec., ibid. p. 454 (*Ochthedromus*).
26. **B. recticolle** Lec., New Species, 1863, i, p. 19.
tetragonoderum Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 240.

Group vii.

27. **B. planatum** Lec., Ann. Lyc. 1848, iv, p. 456 (*Ochthedromus*).
æqualis Walker, Lord's Nat. Vanc., 1866, ii, p. 316.
28. **B. simplex** Lec. mss., List Col. N. Am., 1863, p. 14 (list name without description).
29. **B. planiusculum** Mann., Bull. Mosc., 1843, xvi, p. 215.
30. **B. complanulum** Mann., ibid. 1853, xxvi, p. 152 (*Peryphus*).
31. **B. funereum** Lec., Proc. Ac. Phil., 1860, p. 320.
32. **B. nigrocæruleum** n. sp.
33. **B. mæklini** Lec. mss., List Col. N. Am., 1863, p. 14 (list name without description).
34. **B. quadrifoveolatum** Mann., Bull. Mosc., 1843, xvi. p. 218.
35. **B. incertum** Mots., Bull. Mosc., 1845, xviii. p. 350 (*Notaphus*); Mann., ibid. 1852, xxv, p. 301.
tetraglyptum Mann., ibid. 1853, xxvi, p. 151 (*Peryphus*).
36. **B. breve** Mots., Bull. Mosc., 1845, xviii, p. 28 (*Peryphus*); Mann., ibid. 1852, xxv, p. 301.
37. **B. nebraskense** Lec., New Species, 1863, i, p. 19.

Group viii.

38. **B. grandiceps** n. sp.
39. **B. guexi** Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 242.
planum || Hald., Proc. Ac. Phil., 1843, i, p. 303 (*Peryphus*); Lec., Ann. Lyc., 1848, iv, p. 467 (*Ochthedromus*).

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40. B. **fugax** Lec., Ann. Lyc., 1848, iv, p. 467 (*Ochthedromus*).
planipenne Lec., Agass. Lake Sup., 1850, p. 211 (*Ochthedromus*).

41. B. **transversale** Dej., Spec., 1831, v, p. 110; Mann., Bull. Mosc., 1843, xvi, p. 216; Lec., Ann. Lyc., 1848, iv, p. 466 (*Ochthedromus*).
perspicuum Lec., Ann. Lyc., 1848, iv, p. 466 (*Ochthedromus*).
erosum Mots., Käf. Russl., 1850, p. 10; Bull. Mosc., 1859, xxxii, p. 127.
mannerheimi Lec., Ann. Lyc., 1852, v, p. 190 (*Ochthedromus*).
compar Lec., Proc. Ac. Phil., 1857, p. 5.
haplogonum Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 241; Horn, Trans. Am. Ent. Soc., 1891, xviii, p. 34.

42. B. **lugubre** Lec., Proc. Ac. Phil., 1857, p. 6.
stabile Lec., Bull. U. S. Geol. and Geog. Surv., 1879, v, p. 508.

Group ix.

43. B. **nevadense** Ulke, Rept. U. S. Geol. Surv. (Wheeler), 1875, v, p. 811, pl. 6, fig. 5.

44. B. **consanguineum** n. sp.

45. B. **canadense** n. sp.

46. B. **striola** Lec., Ann. Lyc., 1852, v, p. 190 (*Ochthedromus*).

47. B. **platynoides** n. sp.

48. B. **bimaculatum** Kirby, Faun. Bor. Am., 1837, iv, p. 52 (*Peryphus*); Ed. Can. Ent., ii, p. 170; Lec., Ann. Lyc., 1848, iv, p. 466 (*Ochthedromus*).
sordidum Kirby. Faun. Bor. Am., 1837, iv, p. 52 (*Peryphus*); Ed. Can. Ent. ii, p. 170.

49. B. **postremum** Say. Trans. Am. Phil. Soc., 1834, iv, p. 437; Ed. Lec., ii. p. 551; Lec., Ann. Lyc., 1848, iv. p. 466 (*Ochthedromus*).

50. B. **ustulatum** Linn., Syst. Nat., 1758, i, p. 416 (*Carabus*).
tetracolum Say, Trans. Am. Phil. Soc., 1823, ii, p. 89; ibid. 1834, iv, p. 437; Ed. Lec., ii, pp. 503 and 551; Lec., Ann. Lyc., 1848, iv, p. 465 (*Ochthedromus*).
rupestre Dej., Spec., 1831, v, p. 111.
rupicola Kirby, Faun. Bor. Am., 1837, iv, p. 53 (*Peryphus*); Ed. Can. Ent., ii, p. 170.

51. B. **lucidum** Lec., Ann. Lyc., 1848, iv, p. 466 (*Ochthedromus*).
substrictum Lec., ibid. p. 465 (*Ochthedromus*).

52. B. **fuscicrum** Mots., Etud. Ent., 1855, p. 79.
lucidum var. *b*, Mann., Bull. Mosc., 1853, xxvi, p. 150 (*Peryphus*).
mixtum Lec., List Col. N. Am., 1863, p. 14.

53. B. **scopulinum** Kirby, Faun. Bor. Am., 1837, iv, p. 53 (*Peryphus*); Ed. Can. Ent. ii, p. 170.
gelidum Lec., Ann. Lyc., 1848, iv, p. 464 (*Ochthedromus*).

54. B. **picipes** Kirby, Faun. Bor. Am., 1837, iv, p. 54 (*Peryphus*); Ed. Can. Ent., ii, p. 171; Lec., Ann. Lyc., 1848, iv, p. 465 (*Ochthedromus*); Proc. Ac. Phil., 1873, p. 325.
plagiatum Zimm., Trans. Am. Ent. Soc., 1869, ii, p. 247.
lacunarium Zimm., ibid. p. 248.
militare Casey, Cont. Col., 1885, pt. ii, p. 65.

55. B. **texanum** Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 240.

56. B. **subangustatum** n. sp.

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57. **B. grapii** Gyll., Ins. Suec., 1827, iv, p. 403.
nitens Lec., Agass. Lake Sup., 1850, p. 211 (*Ochthedromus*); Proc. Ac. Phil., 1857, p. 9.
58. **B. californicum** n. sp.

Group x.

59. **B. rickseckeri** n. sp.

Group xi.

60. **B. henshawi** n. sp.
61. **B. consimile** n. sp.
62. **B. scudderi** Lec., Bull. U. S. Geol. and Geog. Surv., 1878, p. 451.
63. **B. hageni** Nobis.
sexpunctatum || Lec., Ann. Lyc., 1852, v, p. 186 (*Ochthedromus*).

Group xii.

64. **B. tigrinum** Lec., Bull. U. S. Geol. and Geog. Surv., 1879, v, p. 509.
65. **B. insulatum** Lec., Ann. Lyc., 1852, v, p. 186 (*Ochthedromus*).
66. **B. cordatum** Lec., Ann. Lyc., 1848, iv, p. 457 (*Ochthedromus*).
67. **B. nubiculosum** Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 244.
laticolle || Lec., Ann. Lyc., 1852, v, p. 187 (*Ochthedromus*).
platyderum G. & H., Cat. Col., 1868, i, p. 418.
68. **B. gracilliforme** n. sp.
69. **B. dentellum** Thunb., Mus. Nat. Ac. Ups., 1785, p. 50, not. 10 (*Carabus*).
undulatum Sturm., Ins., 1825, vi, p. 156, tab. 160, fig. D; Dej., Spec., 1831, v, p. 63.
nigripes ‡ Mann., Bull. Mosc., 1852, xxv, p. 300.
incrematum Lec., Proc. Ac. Phil., 1860, p. 316.
arcuatum Lec., Proc. Am. Phil. Soc., 1878, xvii, p. 594.
70. **B. coloradense** n. sp.
71. **B. approximatum** Lec., Ann. Lyc., 1852, v, p. 187 (*Ochthedromus*).
consentaneum Lec., ibid. p. 187 (*Ochthedromus*).
flammulipenne Mots., Bull. Mosc., 1859, xxxii, p. 129.
72. **B. indistinctum** Dej., Spec., 1831, v, p. 67; Mann., Bull. Mosc., 1843, xvi, p. 215; Lec., Ann. Lyc., 1852, v, p. 187 (*Ochthedromus*).
73. **B. versutum** Lec., Proc. Am. Phil. Soc., 1878, xvii, p. 594.
74. **B. dorsale** Say, Trans. Am. Phil. Soc., 1823, ii, p. 84; ibid. 1834, iv, p. 437;* Ed. Lec., ii, pp. 499 and 550; Dej., Spec., 1831, v, p. 71; Lec., Ann. Lyc., 1848, iv, p. 458 (*Ochthedromus*).
75. **B. postfasciatum** Hamilton, Can. Ent., 1893, xxv, p. 305.
76. **B. variolosum** Mots., Bull. Mosc., 1859, xxxii, p. 131.
77. **B. umbratum** Lec., Ann. Lyc., 1848, iv, p. 458 (*Ochthedromus*).
78. **B. viridicolle** Laf., Rev. Zool., 1841, p. 48 (*Notaphus*); Lec., Ann. Lyc., 1848, p. 458 (*Ochthedromus*).
79. **B. fraternum** Lec., Proc. Ac. Phil., 1857, p. 6.
80. **B. aenicolle** Lec., Ann. Lyc., 1848, iv, p. 459 (*Ochthedromus*).
81. **B. variegatum** Say, Trans. Am. Phil. Soc., 1823, ii, p. 89; Ed. Lec., ii, p. 503; Lec., Ann. Lyc., 1848, iv, p. 459 (*Ochthedromus*).
patruele Dej., Spec., 1831, v, p. 69; Lec., Ann. Lyc., 1848, iv, p. 459 (*Ochthedromus*).

* This quite possibly refers to *postfasciatum* Hamilton.

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posticum Hald., Proc. Ac. Phil., 1843, i, p. 303 (*Notaphus*).
tesselatum || Lec., Ann. Lyc., 1852, v, p. 188 (*Ochthedromus*).
conspersum Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 244.
xanthostictum G. & H., Cat. Col., 1868, i, p. 424.

82. **B. nigripes** Kirby, Faun. Bor. Am., 1837, iv, p. 58 (*Notaphus*); Ed. Can. Ent. ii, p. 172; Lec., Proc. Ac. Phil., 1860, p. 316.

83. **B. intermedium** Kirby, Faun., Bor. Am., 1837, iv, p. 58 (*Notaphus*); Ed. Can. Ent., ii, p. 172.
rapidum Lec., Ann. Lyc., 1848, iv, p. 460 (*Ochthedromus*).

84. **B. convexulum** n. sp.

85. **B. timidum** Lec., Ann. Lyc., 1848, iv, p. 460 (*Ochthedromus*).

86. **B. versicolor** Lec., Ann. Lyc., 1848, iv, p. 460 (*Ochthedromus*).
variegatum || Kirby, Faun. Bor. Am., 1837, iv, p. 58 (*Notaphus*); Ed. Can. Ent., ii, p. 173.
pictum || Lec., Ann. Lyc., 1848, iv, p. 461 (*Ochthedromus*).
flavopictum Mots., Käf. Russl., 1850, p. 13.

87. **B. constrictum** Lec., Ann. Lyc., 1848, iv, p. 462 (*Ochthedromus*).
contractum ‡ Dej., Spec., 1831, v, p. 123.
vernula Casey, Cont. Col., 1885, pt. ii, p. 62.
acticola Casey, ibid. p. 63.

88. **B. contractum** Say, Trans. Am. Phil. Soc., 1823, ii, p. 85; Ed. Lec., ii, p. 500; Lec., Ann. Lyc., 1848, iv, p. 462 (*Ochthedromus*).
vividum Casey, Cont. Col., 1885, pt. ii, p. 66.

89. **B. dejectum** Casey, Cont. Col., 1885, pt. ii, p. 67.

90. **B. grandicolle** Lec., Ann. Lyc., 1852, v, p. 189 (*Ochthedromus*).

91. **B. mormon** n. sp.

92. **B. obtusangulum** Lec., New Spec. Col., 1863, pt. i, p. 19.

93. **B. rubiginosum** Lec., Bull. U. S. Geol. and Geog. Surv., 1879, v, p. 509.

94. **B. ephippiger** Lec. Ann., Lyc., 1852, v, p. 188 (*Ochthedromus*).

95. **B. wickhami** n. sp.

96. **B. constricticolle** n. sp.

97. **B. scintillans** Bates, Biol. Cent.-Am., 1882, i, p. 150.
vinnulum Casey, Cont. Col., 1884, pt. i, p. 15.

98. **B. aratum** Lec., Ann. Lyc., 1852, v, p. 189 (*Ochthedromus*).

99. **B. morulum** Lec., New Spec. Col., 1863, pt. i, p. 19.

100. **B. dyschirinum** Lec., Proc. Ac. Phil., 1861, p. 340.

101. **B. vile** Lec., Ann. Lyc., 1852, v, p. 189 (*Ochthedromus*).

Group xiii.

102. **B. horni** n. sp.

103. **B. bifasciatum** Mots., Käf. Russl., 1850, p. 12 (*Lopha*); Bull. Mosc., 1859, xxxii, p. 124, pl. 3, fig. 1.
mundum Lec., Ann. Lyc., 1852, v, p. 190 (*Ochthedromus*).

Group xiv.

104. **B. præcinctum** Lec., Bull. U. S. Geol. and Geog. Surv., 1879, v, p. 509.

105. **B. dubitans** Lec., Ann. Lyc., 1852, v, p. 189 (*Ochthedromus*).
crurale Lec., ibid. p. 189 (*Ochthedromus*).

106. **B. mutatum** G. & H., Cat. Col., 1868, i, p. 416.
axillare || Lec., Agass. Lake Sup., 1850, p. 211 (*Ochthedromus*).

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107. B. pedicellatum Lec., Proc. Ac. Phil., 1857, p. 6.
108. B. quadrimaculatum Linn., Syst. Nat., 1758, i, p. 416 (*Carabus*); Fab., Syst. El., 1801, i, p. 207; Dej., Spec., 1831, v, p. 187; Kirby, Faun. Bor. Am., 1837, iv, p. 54; Ed. Can. Ent., ii, p. 171; Lec., Ann. Lyc., 1848, iv, p. 462 (*Ochthedromus*).
oppositum Say, Trans. Am. Phil. Soc., 1823, ii, p. 86; ibid. 1834, iv, p. 438; Ed. Lec., ii, pp. 501 and 553.
109. B. jucundum Horn, Proc. Cal. Acad. Sci., 1895, ser. 2, v, p. 230.

Group xv.

110. B. affine Say, Trans. Am. Phil. Soc., 1823, ii, p. 86; Ed. Lec., ii, p. 501; Lec., Ann. Lyc., 1848, iv, p. 462 (*Ochthedromus*).
decipiens Dej., Spec., 1831, v, p. 189.
fallax Dej., ibid. p. 189.
111. B. musicola n. sp.
lampros ‡ Auct.

Group xvi.

112. B. sulcatum Lec., Ann. Lyc., 1848, iv, p. 463 (*Ochthedromus*).
trepidum Lec., ibid. p. 463 (*Ochthedromus*).

Group xvii.

113. B. anguliferum Lec., Ann. Lyc., 1852, v, p. 185 (*Ochthedromus*).
114. B. acutifrons Lec., Bull. U. S. Geol. and Geog. Surv., 1879, v, p. 509.
115. B. cautum Lec., Ann. Lyc., 1848, p. 464 (*Ochthedromus*).
116. B. connivens Lec., Ann. Lyc., 1852, v, p. 188 (*Ochthedromus*).
117. B. assimile Gyll., Ins. Suec., 1810, ii, p. 26; ibid. 1827, iv, p. 410; Dej., Spec., 1831, v, p. 175.
frontale Lec., Ann. Lyc., 1848, iv, p. 462 (*Ochthedromus*).

Group xviii.

118. B. semistriatum Hald., Proc. Ac. Phil., 1843, i, p. 303 (*Leja*).

Group xix.

119. B. trechiforme Lec., Ann. Lyc., 1852, v, p. 190 (*Ochthedromus*).
120. B. iridescens Lec., Ann. Lyc., 1852, v, p. 190 (*Ochthedromus*).

Group xx.

121. B. puritanum n. sp.
122. B. laticeps Lec., Proc. Ac. Phil., 1858, p. 61 (*Lymnæum*).

Group xxi.

123. B. oblongulum Mann., Bull. Mosc., 1852, xxv, p. 299 (*Trechus*); Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 216 (*Lymnæum*).
wingatei Bland., Proc. Ent. Soc. Phil., 1863, ii, p. 319.
124. B. spectabile Mann., Bull. Mosc., 1852, xxv, p. 298 (*Trechus*); Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 216 (*Amerizus*).

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APPENDIX.

Here I have given in full the original descriptions of thirteen species, usually included in our lists, which are unknown to me, and which, so far as I can learn, are unrecognized in this country. The types are probably in European collections, but where I have been unable as yet to ascertain. I should be obliged for any information on this subject.

It is probable that at any rate some of these species are known under other names, and when they become recognized it is quite likely that some changes in our nomenclature will result. As several are described from uniques, it is by no means improbable that at least some of them may represent extreme variations of previously described species.

It has been judged best to reprint the descriptions without any attempt at translation, in order to avoid the chance of error. Many of the works in which they were published are now so rare as to be practically inaccessible to the majority of the students of our fauna. No remarks or suggestions as to the probable position of the species have been appended, those of each author being arranged in alphabetical order.

B. biimpressum Mann., Bull. Mosc., 1843, xvi, p. 217.

"Nigro-æneum, leviter convexum, thorace subquadrato, postice angustato, utrinque foveolato, bistriato, margine virescente, elytris ovatis brunneo-piceis, leviter striatis, interstio tertio punctis duobus profunde impressis, antennis pedibusque piceis.

"Longit. 2, 2½ lin. Latit. 1, 1⅛ lin."

"Habitat in insula Sitkha D. Eschscholtz, e museo Univ. Imp. Mosqu. ad describendum benevole communicavit D. Fischer de Waldheim. Proxime præcendenti [*B. kuprianovi*] nonnihil simille, sed paullo majus, convexus, thorace versus basin majis angustato, elytris latioribus magis rotundatis, levius striatis et colore diversum."

B. glabriusculum Mann., Bull. Mosc., 1853, xxvi, p. 147.

"Breviter ovatum, subdepressum, nigrum, nitidum; capite utrinque profunde sulcato; thorace transverso, longitudine fere duplo latiore, lateribus parum rotundatis, angulis anticis nonnihil rotundato-productis, postice vix sinuato-angustato, per totam longitudinem in medio canaliculato, basi transversim impresso, punctulato, ibique in medio late producto, utrinque oblique truncato, angulis obtusis, intra angulos foveolatim impresso; elytris punctato-striatis, interstio tertio punctis duobus impressis; antennarum articulo primo tibiisque rufis. Longit. 3 lin. Latit. 1½ lin."

"Motschulsky die Käfer Russl. i, p. 15.

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"Habitat in insula Sitkha sec D. Motschulsky, qui individuum in museo ejus asservatum mecum amice communicavit."

B. kuprianovi Mann.. Bull. Mosc., 1843, xvi. p. 217.

"Nigro-æneum, subdepressum, thorace quadrato, utrinque foveolato, bistriato elytris ovatis, subtiliter striatis, interstitio tertio punctis duobus impressis, antennarum basi, tibiis tarsisque rufo-piceis.

"Longit. 2¼ lin. Lat. 1 lin."

"Præcedenti [*B. planiusculum*] majus, latius, thorace breviore, postice vix angustato, elytris brevioribus, subtilius striatis, foveolis in interstitio tertio magis approximatis et colore antennarum pedumque distinctum."

B. fortestriatum Mots.. Bull. Mosc., 1845, xviii, p. 352 (*Omala*).

"Nigra, antennarum articulo primo pedibusque rufo-piceis; fronte sulcis lateribus antice non conniventibus; thorace breve subcordato, angulis posticis rectis; elytris breviter ovatis, dorso profunde punctato-striatis, apice infuscato. Long. 1⅔ lign.; larg. ⅔ lign."

"Cette espèce resemble un peu à l'*O. doris*, mais elle est plus courte et la tache à l'extrémité des élytres est moins visible. Ceux-ci sont très fortement striés à la base, mais les stries disparaissent vers l'extrémité.

"Elle se rencontre sur l'île Sitka."

B. laterimaculatum Mots., Bull. Mosc., 1859, xxxii, p. 130 (*Notaphus*).*

"Oblongus, subconvexus, viridi-æneus, subtus niger, mandibulis, palpis, antennis pedibusque rufo-testaceis; capite triangulare, sulcis frontalibus divergentibus; thorace cordato, lateribus valde rotundatis; elytris ovatis, profundo striatis, fascia antica basi conjuncta maculis hamatis ad apicem interruptis epipleurisque testaceis. Long. 2 l. Lat. ⅔ l."

"Cette espèce rapelle un peu, par sa forme ovale et son corselet fortement cordiforme, les *Ochthedromus* mentionnés plus haut, mais c'est un véritable *Notaphus* voisin aussi de notre *N. fumigatus*. La tête est assez courte, les mandibules un peu avancées, les sillons entre les antennes peu profonds et divergents; les yeux assez saillants. Le corselet est un peu plus large que la tête, transversalement cordiforme, les côtés fortement arqués et un peu rebordés, les impressions de chaque côté de la base bien marquées; angles postérieurs droits. Les élytres sont d'un quart plus larges que le corselet, ovales, fortement striées, les stries couvertes d'une ponctuation serrée; sur le 3-ième intervalle deux fovéoles assez rapprochées; suture un peu relevée en crête; les taches ordinaires jaunes bien marquées, la bande antérieure s'unit avec le point basal sur les 5–6 stries, tandis que les

* No locality is given, but the title of the paper is "Coléoptères nouveaux de la Californie."

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taches postérieures se réunissent sur le bord latéral et forme une tache bilobée qui n'atteint cependant pas la suture à l'extrémité des élytres qui est obscure."

B. obscuromaculatum Mots., Bull. Mosc., 1859, xxxii, p. 130 (*Notaphus*).

"Oblongus, subdepressus, nigro-æneus, antennarum basi pedibusque piceis, thorace transverso; elytris tenue punctato-striatis, fascia interrupta antice, maculisque laterali postice rufo-testaceis, epipleuris nigro-piceis. Long. 1⅓ l. Lat. ⅔ l.

"Il resemble par la taille et la forme à notre *N. fumigatus*, mais sa couleur est plus foncée, le corselet plus carré, moins arrondi sur les côtés, les stries sur les élytres plus finement ponctuées et les taches jaunes distinctes seulement près des bords latéraux et sur la bande transversale près de la base. La tête est triangulaire, les parties de la bouche un peu avancées et de couleur obscure, les sillons entre les antennes assez profonds, parallèles. Le corselet est transversale, peu arqué sur les côtés peu convexe, luisant, un peu cuivreux, les sillons à la base bien marqués, les angles postérieurs droits, saillants. Les élytres sont plus larges que le corselet du doubles plus longues que larges, ce qui donne à l'insecte une forme assez allongée; les stries sont minces, très finement ponctuées; sur le 3-ième intervalle, deux fovéoles; les taches jaunes de la bande transversale près de la base sont étroites, celles sur la partie postérieure ferment seulement un point latéral; la base ainsi que l'extrémité des élytres sont de la couleur obscure, ainsi que les épipleures, les pattes et le reste du corps. Je crois que cette espèce se rencontre aussi dans les possessions russes, notamment sur l'île Kenoi."

B. parallelocolle Mots., Bull. Mosc., 1859. xxxii, p. 125 (*Peryphus*).

"Rufo-piceus, capite, thorace elytrorumque medio subæneis; capite parvo, sulcis frontalibus parallelis; thorace subquadrato, lateribus leviter arcuatis, basi transversim impressa, utrinque bisulcata; elytris thorace fere duplo latioribus, ovatis, striis ad lateribus obsoletis, 7ma nulla. Long. 1⅓ lin. Lat. ⅔ lin."

"De la forme d'un *Trechus*, avec le corselet petit et les élytres élargies et ovalaires. Les impressions entre les antennes sont parallèles et bien marquées, puis vers le milieu de la base de chaque oeil, on remarque un gros point imprimé. Le corselet est un peu plus large que la tête, presque parallèle et arqué seulement vers les angles antérieurs, les angles postérieurs sont aigus; sur la base on voit une profonde impression transversale terminée par les sillons ordinaires et dont le fond est marqué de quelques rugosités longitudinales. Les élytres sont presque deux fois plus larges que le corselet, assez convexes et ovales; les stries distinctes vers la suture, où

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elles paraissent, sont ponctuées et elles s'effacent à mesure qu'elles se rapprochent des bords latéreux des élytres; les deux points imprimés sur la 3-ième strie sont peu distincts. La tête, le corselet et le milieu des élytres sont d'un couleur brune avec un reflet métallique verdâtre, les bords des élytres, le dessous du corps, les palpes et les dix derniers articles des antennes bruns, la base de ces dernières et les pattes d'un testacé rousâtre. St Francisco."

B. subinflatum Mots., Bull. Mosc., 1859, xxxii, p. 126 (*Peryphus*).

"Subdilatatus, depressiusculus, fusco-subcuproæneus, ore, antennarum basi, elytrorum maculis quatuor pedibusque testaceis; thorace subcordato, elytris punctato-striatis, 7-a nulla, interstitio tertio punctis duobus impressis. Long. 2½ l. Lat. 1 l.

"Mas: subparallelus, colore obscuriore, elytrorum stria 7-a postice distincta.

"Cette espèce ressemble beaucoup à notre *Per. rupestris*, mais elle est un peu plus petite et le corselet est plus carré. La femelle se rapproche beaucoup aussi du *Per. lucidus* LeConte et du *Per. tetracolum* et s'en distingue par son corselet moins cordiforme, les élytres plus courtes et plus larges et par les taches jaunes axillaires sur les dernières, qui sont plus étroites et plus limitées par la teinte obscure suturale. La tête est petite, courte, les sillons entre les antennes un peu divergents, le point près de l'oeil est petit. Le corselet est plus large que la tête, assez convexe et cordiforme, avec une impression arquée et profonde à la base qui est finement ponctuée et ridée. Les élytres presque du double plus larges que le corselet, un peu plus dilatées chez la femelle, plus parallèles chez le mâle: les stries sont assez fortement ponctuées, les points serrés; chez le mâle la 7-ième strie est encore visible, mais chez la femelle elle manque; les quatre taches pales sont allongées et distinctement limitées, de sorte que celle du milieu, qui est obscure, forme une espèce de pentagone; la partie rebordée des élytres est de teinte testacé comme les pattes, mais cependant séparée des taches supérieures par une marge obscure. Le dessous du corps est obscur. Colonie Ross."

B. hamiferum Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 244.

"5½ millim. Il ressemble assez au précédent, mais il est plus grand, et sur les élytres il n'ya de visible que la tache en fer à cheval du bout. Corselet un peu plus large, le milieu des côtés plus arrondi, les angles antérieurs un peu plus avancés et moins arrondis, la sinuosité qui précède les angles postérieurs court et un peu plus sensible, leur sommet nullement obtus; la carène préangulaire plus faible, l'impression latérale de la base moins marquée. Elytres un peu plus allongées, semblables, d'ailleurs, pour la forme et la sculpture; l'extrémité des stries est plus faible, celle des intermédiaires presque effacée. C'est une espèce égale-

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ment très-voisine du *viridicolle*, mais plus élargie; la tête et le corselet sont surtout plus larges; antennes et pattes colorées comme dans ce dernier.

"M. Sallé m'en a envoyé trois individus trouvés dans le Texas."

B. pilatei Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 243.

"7 millim. Il ressemble en grand au *viridicolle* Laferté, les impressions frontales sont plus larges et plus enfoncées; le corselet est plus large, plus rétréci à sa base, plus arrondi sur le milieu des côtés, la sinuosité qui précède les angles postérieurs est plus courte et plus faible; ceux-ci sont moins saillants et plus petits; le dessus est plus convexe; les petits sillons des côtés de la base plus imprimés, celle-ci moins lisse. Elytres un peu plus ovalaires, ce qui provient de ce que la courbe des côtés, derrière des épaules, est moins forte; les stries sont plus profondes, la ponctuation en est plus forte, et l'extrémité s'affaiblit beaucoup. Le dessus du corps est d'un vert plus clair légèrement cuivreux; il n'y a sur les élytres que la tache jaune en fer à cheval de l'extrémité; le dessous du corps est brun, avec l'abdomen plus clair; les mandibules sont d'un brun clair, les antennes, les palpes, et les pattes entièrement ferrugineux.

"Je n'en possède qu'un individu trouvé dans le Texas par feu Pilate."

B. platyderum Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 242.

"6¼ millim. Encore voisin du précédant [*B. rufotinctum*], mais bien distinct. D'un couleur olivâtre plus terne tant en dessus qu'en dessous, sans tache sur les élytres; antennes, palpes, jambes et tarses bruns, le premier article des premières et les cuisses testacés. Antennes plus longues, à l'articles plus allongés. Tête moins courte; corselet, au contraire, plus court, plus transversal, nullement rétréci en arrière moins arrondi et à peine sinué sur les côtés; la base coupée un peu plus obliquement vers les angles postérieurs qui sont tout aussi droits, le dessus plus plan, moins lisse sur le disque; ligne médiane moins imprimée, impression latérale de la base un peu plus marquée; séparée de la gouttière latérale qui est un peu plus large par un espace relevé; pas de trace de carène triangulaire. Elytres bien plus allongées, un peu moins carrées aux épaules et moins parallèles, striées et ponctuées tout à fait de même, sauf que l'extrémité des stries est plus distincte. Pattes un peu plus longues.

"Schaum me l'avait envoyé comme venant de New York, et l'avait confondu avec l' *antiquum* dont il a un peu la coloration, et auquel il ressemble, mais dont il diffère par la forme plus carrée du corselet, dont les impressions basales sont moins profondes, et par ses élytres plus ovalaires; la rondeur des côtés derrière est surtout biens moins forte dans le *platyderum* que dans l'*antiquum*."

B. rufotinctum Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 241.

"5¼ millim. Il fait le passage aux *Notaphus*, car sur sa tête et son corselet, quoique brilliants encore, on observe une chagrination très-fine. Tête assez courte et large, peu rétrécie derrière les yeux, qui sont grands et saillants; sillons frontaux larges, profonds, parallèles, avec une tendance à s'arquer en dedans postérieurement; près du milieu du bord des yeux un gros point, séparé du sillon par une côté élevée. Corselet dépassent à peine la largeur de la tête avec les yeux, moins long que large, mais peu transversal, cordiforme et rétréci à sa base, assez

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échancré au bord antérieur; sommet des angles antérieurs à peine arrondi, côtés assez arrondis antérieurement, sinués postérieurement et parallèles depuis la sinuosité jusqu' aux angles postérieurs qui sont très-droits, la base legèrement arrondie, le dessus peu convexe, mais descendant assez rapidement vers les angles antérieurs; base assez plane, finement rugueuse; ligne médiane assez marquée et s'arretant aux deux impressions transversales toutes deux assez distinctes et arquées en sens inverse; impressions latérales de la base à peine distinctes, rebord latéral très-fin; absence totale de carène préangulaire. Elytres de la même forme que dans le *transversale*, de deux tiers plus larges que le corselet, le dessus plane, la ponctuation des stries plus fine et plus serrée, les intérieures moins imprimées; l'extrémité de toutes affaiblie, mais encore distincte, la septième presque aussi marquée que les autres, tous les intervalles très-planes, la série submarginale de points presque effacées, hormis quelques-uns à la base et derrière le milieu. Tête et corselet d'un vert-olivâtre un peu cuivreux; élytres d'un bronzé cuivreux sur le disque avec une large bordure de la couleur du corselet et une tache indistincte sur la suture derrière le milieu d'un rouge ferrugineux; le dessous du corps d'un brun foncé; antennes et palpes bruns, la base et trois premiers articles des premières d'un testacé-jaunâtre; cuisses testacées, jambes et tarses plus foncés, presque bruns.

"Je dois cette jolie espèce à Guex, elle a un faux air du *planum*, Haldeman."

B. sordidulum Chaud., Rev. et Mag. Zool., 1868, ser. 2, xx, p. 244.

"2⅞ millim. C'est la plus petite espèce décrite de ce group, auquel elle appartient par le reticulation de sa surface, par le peu de profondeur des sillons frontaux et par ses stries entiéres jusqu'a l'extrémité. Plus petit et surtout bien plus étroit que le *conspersum* (*tesselatum* Lec.), d'un bronzé plus obscur; antennes moins allongées à articles plus courts, presque entièrement d'un bronzé verdâtre, ainsi que les palpes. Corselet plus étroit, à peine plus large que la tête avec les yeux, plus rétreci et plus sinué postérieurement, avec les deux impressions transversales plus faibles. Elytres plus étroites, ce qui les fait paraître plus allongées; stries complêtes moins profondes, leur ponctuation moins serrée; les intervalles plus chagrinés et plus ternes; la base jusqu' au tiers d'un jaune sale un peu marbré, ainsi que l'extrémité; entre deux une tache jaunâtre de chaque côté, non loin du bords aux deux tiers postérieurs formant l'extrémité du crochet apical. Dessous du corps et cuisses d'un bronzé presque noirs; les quatre trochanters antérieurs et les jambes d'un jaune obscur, les tarses plus foncés.

"Un seul individu trouvé en Californie par M. Lorquin."

ERRATA.

Page 35, line 3, of foot-note, for one *read* ones.
" 47, line 17, for 6.25 *read* 5.5.
" 76, line 25, for obliquely *read* obsoletely.
" 93, line 23, for Legs *read* Length.
" 100, line 17, for in *read* is.
" 118, line 16 from bottom, fourth word, for apex *read* base.

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NEW AND LITTLE-KNOWN BEES.

BY T. D. A. COCKERELL.

(1.) **Augochlora nigrocyanea** n. sp. ♀.—Belongs to section with hind spur of hind leg minutely ciliate. Length about 11 mm. Head and thorax dark indigo-blue; abdomen black, with green reflections on the sides of the first two segments. Pubescence of head and thorax short, moderately abundant, but inconspicuous because fuscous. On the cheeks and pleura beneath it is white, but sparse, and the sides of the face are very thinly clothed with very short, white pubescence; front extremely closely punctured, centrally black, becoming blue close to the orbits; facial keel distinct; clypeus with large, close punctures, one might say malleate; lateral ocelli as far apart as the distance of either from the eye; flagellum becoming dark fuscous; mandibles tinged with dark rufous beyond the middle, strongly bidentate at tips, the teeth diverging, the lower the longer; tubercles with a fringe of white hairs; mesothorax and scutellum very closely punctured: postscutellum and base of metathorax a much brighter blue; base of metathorax delicately, but strongly longitudinally wrinkled all over; tegulæ piceous, with a fulvous spot. Wings smoky, nervures and stigma piceous, marginal cell with a small appendicular cell at its tip; first recurrent nervure joining second submarginal cell at its extreme end. That portion of radial nervure beyond the junction with third transverso-cubital considerably the longer. Legs black, with fuscous pubescence, small joints of anterior tarsi rufescent, anterior femora beneath with long whitish hairs. Abdomen with excessively minute punctures, only visible with a strong lens; pruinose with short, thin, whitish pubescence; sides, venter and base of first segment with thin, erect, pale fuscous and whitish pubescence; dorsum of first segment nearly bare. The apparent color of the pubescence differs somewhat according to the direction of the light.

Hab.—San Rafael, Vera Cruz, Mexico, July 1 (C. H. T. Townsend). A very distinct species; its color recalls *A. tarpeia*, but that is much smaller.

(2.) **Augochlora seminigra** n. sp. ♀.—Belongs to section with spur minutely ciliate. Length about or slightly over 5 mm. Head and thorax green, abdomen black, with a slight green lustre on the sides; pubescence sparse, whitish or very pale ochreous, a very few black hairs on scutellum; face broad, minutely roughened or shagreened; clypeus with its upper margin broadly green, the rest black, the lower corners produced into short denticles. The junction between the black and green on the clypeus is brassy, as also is the convex, shining, supraclypeal area; labrum black, with six delicate longitudinal ridges; mandibles orange-rufous with black bases: antennæ black, flagellum beneath dark sepia brown, second and third joints of flagellum very short. Thorax very finely and closely punctured, more shining than the head, dorsally tinged, brassy; enclosure of metathorax blue-green, very delicately longitudinally wrinkled; tegulæ shining, dark yellowish brown. Wings smoky, nervures and stigma fuscous, marginal

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cell not appendiculate, second submarginal narrowed above. Legs very dark brown, tarsi dark ferruginous, pubescence of legs sparse and pale. Abdomen shining black, the sides with a slight green lustre, pubescence sparse and brownish, just enough on hinder part to make it look slightly dusty; punctures sparse and extremely minute.

Hab.—San Rafael, Vera Cruz, March 9, on yellow flowers of *Melopodium* (C. H. T. Townsend). Easily recognized by its small size and coloration. It might be taken for an *Halictus* at a glance, but the eyes are emarginate; and the green is a sort of Prussian green, quite different from that commonly observed in *Halictus*.

(3.) **Augochlora subignita** n. sp. ♀.—Belongs to section with large spines on spur. Length about 8 mm. Head and thorax bright green, very densely punctured. Abdomen metallic crimson, inclining to violaceous or purple, rather sparsely punctured. As compared with *A. pura* (which is not closely allied, but is chosen because it is a common species, in everyone's possession), the face is decidedly broadly in the middle, but the distance between the lateral ocelli and the eyes is not quite so great; the face below the antennæ is shorter, and the antennæ are somewhat wider apart, with a more elevated ridge between them; the black area on the clypeus is larger; the antennæ are about the same, except that the scape is more slender; the punctures of the mesothorax are larger and more distinct from one another; the middle of the mesothorax is rather inclined to brassy; the tegulæ are larger and partly green behind; the sparse hairs on the dorsum of the thorax are partly black; the enclosure of the metathorax instead of being covered with longitudinal grooves or wrinkles is smooth at the base, with two oblique bands of very short wrinkles, meeting in the specimen described at an angle of about 125°, but variable. The wings are uniformly smoky, the costal nervure black, the other nervures and stigma dark sepia brown; marginal cell appendiculate. Legs much as in *pura*, but the hind legs decidedly stouter throughout, the hindmost spur of hind legs with six long spines. Abdomen crimson with purple tints, hind margins of segments with thin, very narrow bands of fulvous hairs; venter dark, with yellowish white hairs.

Hab.—San Rafael, Vera Cruz, March 13 and 14, on flowers of plant No. 7 (C. H. T. Townsend). Resembles *A. ignita* Sm., but the abdomen is not so brilliant, more violaceous, wings not clear and the nervures not testaceous. *A. ignita* belongs to a different section of the genus by the character of the spur. In many respects *A. subignita* more resembles *A. acidalia* Sm., from Uruguay, but the abdomen is not "very finely" punctured. *A. vesta* Sm. seems also allied, but is evidently distinct.

(4.) **Augochlora ignita** Smith.—Belongs to section with spur ciliate. The ♂, hitherto undescribed, differs by having the end of the clypeus whitish and the first joint of the flagellum rufous.

Hab.—San Rafael, Vera Cruz, last of June, many on flowers of *Cordia*, probably *C. ferruginea*, according to Dr. J. N. Rose (C. H.

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T. Townsend). San Rafael and the vicinity is rich in *Augochlora* (seven species), in striking contrast with southern New Mexico, where I find only one (*A. pura* Say).

(5.) **Agapostemon melliventris** Cresson ♂.—Length 9 mm. Head and thorax brilliant green; hind part of mesothorax and metathorax bluer than scutellum and postscutellum. Head like that of *radiatus* in shape and size; labrum, mandibles, except tips, and broad anterior margin of clypeus sending a tongue upward in the median line, lemon-yellow. Head and thorax thinly clothed with yellowish white hairs, long and rather dense on cheeks below; inner orbits roundly emarginate; antennæ reaching to middle of metathorax; scape yellow, with a small suffused dark spot at end above; funicle yellow below, black above; flagellum pale brownish orange below, black above; a black spot at base of each antenna, and on each side of clypeus, as is also the case in *radiatus;* mesothorax coarsely and closely punctured, in fact subcancellate, the sculpture uniform, not as in *texanus:* enclosure of metathorax rather strongly longitudinally wrinkled, much as in *radiatus;* tegulæ hyaline, with a semilunar lemon-yellow spot. Wings hyaline, nervures and stigma pale orange-brown, costal nervure black; stigma larger than in *radiatus.* Legs (except coxæ) lemon-yellow, a dark brown spot on distal end of hind femur. Abdomen lemon-yellow, with a narrow, black, subapical band on each segment, somewhat broadened at the sides, but failing at exteme sides, the part just behind it faintly orange tinged; venter yellow, more or less marked with brown.

I had supposed this might be a new species, but on further consideration I must agree with Mr. Fox, who regards it as the undescribed ♂ of *melliventris.* My New Mexico records for *melliventris* are as follows:

Rincon, July 5, many males at flowers of mesquite; one ♀ at rest on mesquite. Mesilla, July 23, ♀ on *Solanum elæagnifolium.* Mesilla, August 14, ♂ on *Solidago canadensis;* also August 18, ♂ on *Clematis ligusticifolia;* also August 23, on *Bigelovia wrightii* ♂.

Las Cruces, October 19, ♂ on garden *Cosmos.* Las Cruces, May 3, on *Salix,* ♀. Little Mountain, March 26, ♀ on *Streptanthus carinatus.* College Farm, Mesilla Valley, April 12, on *Sisymbrium.* Las Cruces, September 22, ♂ on *Verbesina encelioides.*

Thus it flies all through the season and visits many kinds of flowers. Prof. Toumey sent me a ♂ from Tucson, Ariz., where it was taken on flowers of *Bigelovia hartwegi.*

(6.) **Halictus arcuatus** Rob., race **argemonis** n. race.

This may be distinguished as follows:

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arcuatus ♀.	**argemonis** ♀.
Base of metathorax shining, with large, irregular, longitudinal wrinkles.	Base of metathorax moderately shining, but minutely granular, with very fine, small, longitudinal wrinkles not reaching the hind edge of the enclosure.
Parapsidal grooves wanting.	Parapsidal grooves distinct.
	Punctures of abdomen a little smaller.
Hind margins of abdominal segments very narrowly, but perceptibly testaceous.	Hind margins of abdominal segments not noticeably testaceous.

Race *argemonis* differs from *H. pseudopectoralis* by its much broader face, dull yellowish stigma, continuous narrow hair-band at base of second abdominal segment, etc.

Hab.—Paso de Telaya, Vera Cruz, March 29, on flowers of *Argemone mexicana* (C. H. T. Townsend).

(7.) **Panurgus lustrans*** n. sp. ♀.—Length 8 mm., black, with short, thin, mouse-gray (or rather more brownish) pubescence, not concealing the shiny surface. Head nearly circular, face not particularly broad, thinly pubescent all over; face and clypeus quite closely and strongly punctured, lower edge of clypeus with a fringe of pale reddish or orange shining hairs; mandibles dark, only in the slightest degree rufescent at the broad tips, which are more or less notched; maxillary palpi 6-jointed, the joints after the first subequal, but the third conspicuously shorter than the second; labial palpi 4-jointed, first joint not so long as the last three together, the last three about equal in length; glossa not very long, acutely pointed, notched at sides; antennæ rather short, scape long, funicle unusually large, flagellum short, obscure brownish beneath towards tip, second and third joints very short; mesothorax moderately shining, but microscopically tessellate, with sparse, small punctures; scutellum with rather close, but feeble punctures; postscutellum pubescent; metathorax thinly pubescent with conspicuously plumose hairs, except the basal enclosure, which is roughened, and longitudinally wrinkled at base; it is not bounded by a raised rim; tegulæ shining dark brown, with a subhyaline spot. Wings hyaline, nervures and stigma pale brown, costal nervure black; stigma large; second recurrent nervure with its upper two-thirds bowed outwardly; basal nervure strongly bent; tibiæ and tarsi with whitish pubescence; hind femora with long, thin scopa on basal two-thirds, which collects pollen quite as much as the tibial scopa, which is not very long, but conspicuously plumose; claws cleft. Abdomen shaped like that of an *Halictus*, shiny, finely punctured, base and sides of first segment, sides of second, and whole dorsum of third, fourth and fifth segments with sparse, pale grayish pubescence; when the abdomen is a little extended the articulating base of fourth segment is exposed and forms a shiny naked band; apex roundedly truncate; ventral segments with thin bands of rather long whitish hairs.

Hab.—Mr. Clark Rodger's ranch, Lone Mountain, near Silver

* Prof. E. O. Wooton has identified the flower visited by *Panurgus lustrans* as *Pyrrhopappus*, probably *P. rothrockii* Gray, possibly new.—T. D. A. C.

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City, New Mex., July 7, 1896, numerous at flowers of a composite resembling a large *Crepis* or *Hieracium*. The sulphur-yellow flowers are visited by the bees early in the morning; as the day grows hot they close. This bee is not a true *Panurgus*. The stigma is large, and the inner angle of the second recurrent nervure with the cubital is greater than a right angle. It may form the type of a new genus; it is not a *Macropis*. [Occurs also in Texas.—W. J. F.]

(8.) **Panurgus pectidis** n. sp. ♀.—Length about or nearly 10 mm. Head and thorax black, abdomen and most of legs rufous. Head of ordinary size, face broad and flat, vertex low, cheeks not prominent, pubescence of head and thorax pale ochreous, dense on cheeks and occiput, thin on face; ocelli in a curve, hardly a triangle, the lateral ones looking outward; vertex shining, sparsely but distinctly punctured, front above antennæ very closely punctured, pale parts of face with sparse punctures, very large on clypeus; mandibles stout, simple, medially rufous; labrum black, process rounded; clypeus, except anterior edge and the usual pair of black spots, and large lateral face marks primrose yellow. The lateral face marks are almost exactly semicircular, but emit above a yellow line ascending the orbital margin; no supraclypeal or dogear marks; flagellum orange rufous beneath from the fourth joint, and towards tip more or less above; distal end of funicle pallid; mesothorax, scutellum and postscutellum densely covered with short tawny pubescence, similar but longer pubescence on pleura and sides of metathorax; base of metathorax medially smooth and shining; tegulæ pale testaceous. Wings hyaline at base, strongly smoky beyond the cells, and more or less in the outer cells; nervures and stigma brown; costal nervure black; outer nervures blackish, inner becoming pale rufescent, as also the stigma, which is small; marginal cell long, terminating in an obtuse point on costa; first recurrent nervure broken by one, the second by two, hyaline dots; inner angle of the second recurrent nervure with the cubital practically a right angle, only very slightly less, or sometimes rather noticeably less. Legs rufous, with tolerably abundant pale ochreous pubescence; coxæ blackish, femora more or less strongly suffused with black; claws with the inner tooth a minute inconspicuous denticle. Abdomen orange rufous above and below shining, practically naked above except the apex, which is strongly fringed with pale ochreous hairs; dorsal surface with small sparse punctures; second segment with a round black spot on each side. The hind trochanters bear a curled tuft of hair, as in *Andrena*.

Hab.—Las Cruces, New Mex., Sept. 17, 1895, on flowers of *Pectis papposa*. Two females.

(9.) **Panurgus rhodoceratus** n. sp. ♀.—Length 8.5-9.5 mm. Black, face wholly black; flagellum, except first joint, orange rufous beneath, mandibles rufous in middle, small joints of tarsi rufous; pubescence dull white, grayish white on dorsum of thorax, face and occiput, not at all mixed with black; pubescence of head and thorax rather thin, not concealing surface. Head rather broad, face about square, vertex shining, clypeus sparsely punctured, cheeks rounded, mandibles notched on inner side near tip; mesothorax with short pubescence, and larger hairs intermixed, its surface minutely punctured, with very sparse, larger, obscure punctures; scutellum shining, with extremely minute

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punctures; base of metathorax nude, smooth and shining, not bounded by a sharp edge; tegulæ testaceous, pubescent. Wings hyaline; costa, stigma, and nervures at base of wing (except the black costal nervure) yellowish ferruginous; the other nervures fuscous; the stigma varies to fuscous; second submarginal cell narrowed somewhat more than half to marginal. Legs with whitish pubescence. Abdomen flattened dorsally, minutely roughened, covered with a fine, inconspicuous pale down; hind margins of segments with uniform bands of dense, appressed, white pubescence, adjacent bases of following segments with similar, but thinner and narrower bands, usually concealed by the retraction of the segments; apex with white hairs; venter almost entirely nude.

♂.—Length 8-9 mm. Pubescence of head and thorax longer and denser, that on face dense and white; mandibles more slender, not notched near their rufous tips, but some distance below: face wholly dark; antennæ somewhat longer, flagellum only obscurely rufescent beneath, its second joint very short, not so long as broad. Wings very slightly dusky toward apex; tarsi all pale ferruginous; also the hind tibiæ, except for a blackish subapical cloud in front; ventral surface of abdomen more pubescent, dorsal surface not flattened. The hind tibiæ may be almost entirely blackish.

Hab.—Las Cruces, New Mex. On flowers of *Pectis papposa* Sept. 17, 1895, eight females and seven males. On *Verbesina encelioides* September 11 and 12, four males.

(10.) **Panurgus oliviæ** n. sp. ♂.—Length 7-7.5 mm. Black, face wholly black, mandibles black, flagellum dark rufous beneath. Legs, including tarsi, black; pubescence dull white, dense on face, pleura, and dorsum of thorax; short and appressed on legs, giving them a gray appearance. Head broad, face narrowing below (as is also the case with the ♂ of *rhodoceratus*); eyes dark sage green, vertex shining, second joint of flagellum broader than long; mesothorax and scutellum with very minute, obscure punctures, and very sparse large ones; base of metathorax shining; tegulæ piceous, pubescent. Wings smoky, varying to nearly hyaline, with the apex hyaline and slightly milky; nervures and stigma piceous, second submarginal cell narrowed rather more than half to marginal. Abdomen minutely roughened, pruinose, hind margins of segments inclined to be slightly pallid, with bands of appressed white pubescence, neither so broad nor so dense as in *rhodoceratus*.

Hab.—Las Cruces, New Mex. On flowers of *Pectis papposa* Sept. 17, 1895, three males.

P. oliviæ is very near to *rhodoceratus*, but is easily known by its smaller size, wholly black legs, and the peculiar coloration of the wings.

The stigma of *oliviæ* and *rhodoceratus* is considerably smaller than that of *andrenoides;* and these two species agree in having the inner angle formed by the second recurrent nervure and the cubital nervure considerably less than a right angle, whereas in *andrenoides* it is greater than a right angle. *P. andrenoides* Cresson is a Spring species, and is common at Las Cruces on flowers of *Sisymbrium* at the middle of April.

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The European *P. cephalotes* Latr., which I have from Marseilles (E. André), has the comparatively small stigma and the above-mentioned angle less than a right angle, but it differs from our species in having the marginal cell truncate and appendiculate.

P. halictulus Cresson, which I took on *Helianthus* at Santa Fé on Aug. 22, 1894 (the specimen determined by Mr. Fox), and at Las Cruces on *Helianthus annuus* on Sept. 21, 1895, has the small stigma, but the inner angle of the second recurrent nervure with the cubital is exactly a right angle. The tongue of *halictulus* is long and slender, like that of a *Calliopsis*.

It is perfectly evident that the so-called species of *Panurgus* of North America are not all of the same genus. By the character of the mouth-parts *halictulus* is an Apid, while the other species referred to above seem all to be Andrenids Cresson classes *Panurgus* with the Apidæ; it is, however, in its typical form unquestionably Andrenid, as is recognized by Mr. E. Saunders in his recently published "Hymenoptera Aculeata of the British Islands." It would seem, however, that there has long existed some confusion in regard to the proper components of this genus, for Smith (B. M. Cat. 1853, pl. v, fig. 7) figures for *Panurgus* a long, slender, Apid tongue, as in *P. halictulus;* whereas E. Saunders (Jour. Linn. Soc. Zool. xxiii, 1890, pl. v, figs. 4–6) figures an utterly different structure, which belongs to those species which must be regarded as Andrenidæ, notwithstanding the moderately lengthened tongue. It is unfortunate that neither of these authors tells us what species his figure was taken from.

Robertson has suggested that *P. andrenoides* may be a *Scrapter*, but Dalla Torre places *Scrapter* as a synonym of *Macropis*, and certainly *andrenoides* is not a *Macropis*. Smith's figure of the tongue of *Scrapter* certainly suggests *Panurgus* (Andrenid), and differs considerably from his figure of the same structure in *Macropis*.

It is to be remarked, before leaving the subject, that the long, slender tongue of *P. halictulus* may be less indicative of natural affinity than one would be ready at first to suppose. It is, at any rate, specially adapted for obtaining nectar out of the disc-florets of the sunflower, and may be a comparatively recent development to that end. Even the little meloid beetles (*Gnathium texanum* Horn det. Wickham) which live on the discs of sunflowers, in Mesilla, have enormously elongated mouth-parts.

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(11.) **Protandrena mexicanorum** (Ckll.)

This is to be added to the United States fauna, as I took two males on flowers of *Aster spinosus* in Mesilla, New Mex., July 21, 1896. The male may be known from that of *asclepiadis* by the color of the stigma, but the two forms are to be considered geographical races of one species.

(12.) **Nomada limata** Cresson.

Prof. Townsend took a female on *Bidens* at San Rafael, Vera Cruz, March 8. It represents a variety with the marks more yellow, and no spot on clypeus and pleura; this agrees more nearly with *N. montezuma* Smith from Orizaba, which is, I am convinced, only a form of *limata*. Cresson's name has priority.

(13.) **Calliopsis renimaculatus** Ckll.

I took one specimen of this at Las Cruces, New Mex., September 23, on *Gutienezia sarothræ* var. *microcephala*. It represents a slight variation, with the yellow face-mark wholly supraclypeal.

(14.) **Calliopsis tricolor** n. sp. ♀.—Length about 9 mm., rather stout, almost entirely naked; black; with the face-marks, tubercles, first four legs in part, and abdominal bands, chrome-yellow; first abdominal segment largely rufous. Head broader than long, vertex and front densely punctured, except a broad, shallow groove in front of each eye; clypeus high, distinctly, but sparsely punctured; antennæ black, flagellum becoming brown beneath; mandibles with a large, yellow, basal patch; clypeus with its upper half yellow, the yellow sending a rounded projection downward in the median line; supraclypeal yellow mark quadrate, fully twice as broad as long, dog-ear marks well developed and large; lateral face-marks consisting of a short, broad band, reaching from about the lower margin of the yellow on the side of the clypeus to the top of the dog-ear mark, joining these, but separated from the orbit by a narrow interval. Thorax rather dull, minutely and strongly, but very closely punctured, median and parapsidal grooves of the naked mesothorax distinct; hind margin of prothorax with a narrow band of dull white pubescence; tubercles yellow; tegulæ reddish testaceous, with a small yellow spot. Wings smoky, outer margin broadly darker, stigma orange-brown, nervures testaceous, costal nervure black; marginal cell with an abrupt, only slightly oblique, truncation; second recurrent nervure joining second submarginal cell almost at its tip. Legs sparsely pubescent, black; apical ends of first four femora, anterior tibiæ in front, and somewhat more than the basal half of middle tibiæ, yellow; basal joint of hind tarsi long and flattened, with parallel sides, minutely granular on outer side. Abdomen strongly punctured, hind margins of segments 1-4 with rather broad yellow bands, somewhat broader in the middle than at the sides; first segment otherwise rufous, with the base and a dorsal patch black; venter dark, the margins of the segments only slightly brownish.

Hab.—Near Philadelphia, Pa. (Dr. Skinner). Sent by Mr. C. F. Baker.

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[*Tricolor* is really from Camden County, New Jersey, and is the variety of *abdominalis* mentioned in "Ent. News," iii, 29. I am not yet convinced that it is a distinct species, an opinion which Mr. Cockerell expresses above.—W. J. F.]

(15.) **Calliopsis townsendi** n. sp. ♂.—Length 6 mm. Black; the pubescence white, very short and thin, only noticeable on cheeks, hind border of prothorax, scutellum, sides of metathorax, pleura, and sides of abdomen, and nowhere dense. Head somewhat broader than long, strongly punctured, face bare, with a few short, scattered hairs laterally; clypeus large, broadly truncate above, entirely cream color, except the dots, which are minute, and the anterior margin; no supraclypeal or lateral marks; labrum black, the process obscurely whitish, except the emarginate end, which is black. In another specimen the end of the process is entire; the lower margin of the clypeus is broadly excavated to expose the process of the labrum; mandibles cream color with rufous ends, furnished with a long brush of pale hairs beneath; antennæ wholly black, first joint of flagellum larger than second, but not so long as 2 + 3. Thorax closely punctured; tubercles with a pale yellow spot; base of metathorax obscurely longitudinally wrinkled; tegulæ reddish testaceous. Wings grayish hyaline, slightly darkened at apex; nervures and stigma black; marginal cell appendiculate; second submarginal narrowed hardly half to marginal, receiving first recurrent nervure one-third of its length from base, and second at extreme apex. Legs very sparsely pubescent, black; the knees, anterior tibiæ in front, and first four tarsi, rufous; the hind tarsi fuscous, the basal joint rufous within; outer edge of hind tibiæ crenate; the second, third and fourth joints of the anterior tarsi form equilateral triangles. Abdomen rather narrow and cylindrical, black, finely and distinctly punctured, the depressed portions of the hind margins of the segments much more finely and closely, so as to be microscopically cancellate; thin white pubescence at basal sides of segments extending mesad somewhat, but not forming bands, or forming only very indistinct bands toward the apex.

Hab.—Two at Dripping Spring, Organ Mountains, New Mexico, 5600 feet, Aug. 10, 1896 (C. H. T. Townsend). One on a flower of a composite—*Erigeron*, or an allied form.

This is perhaps a *Protandrena* with only two submarginal cells, and not a true *Calliopsis*, but I have not studied the tongue, which is retracted in the types. It differs from *C. bakeri* by its larger size, color of mandibles and tegulæ, much longer marginal cell, etc. Differs at once from *C. clypeatus* by the venation.

(16.) **Perdita solitaria** n. sp. ♀.—Length 4.5 mm. Head and thorax black, without the least blue or green lustre. Abdomen and legs piceous brown; no light markings; mandibles yellowish rufous, abruptly dark rufous at tips, which are not bifid; margins of abdominal segments obscurely dark reddish brown; flagellum dark coffee-brown beneath. Head of ordinary size, round seen from in front, face nearly bare, facial ridge strong, clypeus low, with large shallow punctures, ocelli in a low, but decided triangle; front and vertex dull, micro-

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scopically sculptured with fine grooves, in part modified into a minute tessellation; mesothorax nude, dullish, sculptured like the vertex, median impressed line distinct; scutellum and base of metathorax similarly sculptured, as also the pleura; tegulæ testaceous. Wings hyaline, nervures and stigma piceous; stigma very poorly developed, narrow, running to a fine point; marginal cell obliquely truncate, with a very short appendicular nervure; poststigmatal portion somewhat the larger; second submarginal narrowed more than half to marginal; third discoidal distinct. Legs with thin, whitish pubescence. Abdomen of ordinary shape, moderately shining, minutely sculptured in the same manner as the thorax; pollen is carried on the hind legs and on the venter of the thorax, quite a quantity in the latter position.

Hab.—Two specimens in Soledad Canon, Organ Mountains, New Mexico, August 15 on plant No. 41, a small composite with deep yellow flowers (C. H. T. Townsend).

In my key to *Perdita* (Proc. Phila. Acad., 1896, p. 45) this runs down to 20, where it is distinguished by the black head and thorax, and small size. It is a very peculiar and distinct little species, intermediate between *Perdita* s. str. and *Macrotera*.

(17.) **Perdita callicerata** n. sp. ♂.—Length 4½ mm. Head and thorax shining, very dark indigo-blue, vertex slightly inclined to be greenish; both head and thorax with sparse, but long and conspicuous white hairs, denser on face and cheeks; cheeks unarmed. Head fairly large, broader than long; clypeus very low, black with an æneous tinge, the anterior margin broadly creamy white; on each side of the clypeus is an equilateral triangle of the same æneous black, and the extreme corner between the eye and the mandible is cream color; labrum bilobate, pellucid white; mandibles slender, simple, white with the ends rufous, and a black basal tubercle; scape and funicle piceous, pallid at ends; flagellum a beautiful sulphur-yellow, with the first six joints more or less ringed with piceous above; eyes piceous; vertex minutely granular. Thorax without light marks; tegulæ hyaline, colorless, with an opaque spot in front. Wings hyaline, nervures and stigma yellowish white; third discoidal cell absent, though in certain lights the faintest indication of the missing recurrent nervure is perceptible; marginal cell with the substigmatal portion perhaps slightly the longer; second submarginal much narrowed above, approaching an equilateral triangle, the lower inner corner truncate; coxæ black, with the ends yellowish; trochanters black, femora black, with the knees pale yellow, anterior tibiæ all yellow, middle tibiæ yellow, with a black patch in front and a shade behind; hind tibiæ yellow at ends, black in middle, with long white hairs; tarsi pale yellow, claws dark at their strongly bifid tips. Abdomen dark sepia brown, segments 1-5 with cream-colored bands, which are broadly sublaterally notched above on each side, so as to be for a space narrowed to a fine line, and seeming interrupted until examined with a strong lens; laterad of this the bands rapidly widen, and are confluent at the extreme sides; sixth segment pale; apex pale orange; venter entirely pale yellowish, except the first segment, which is black.

Hab.—Las Cruces, New Mex., Aug. 21, 1896, two on plant No. 44, which I take to be *Baileya multiradiata* (C. H. T. Townsend).

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In my key to *Perdita* this runs down to 68, and agrees with *alborittata* in the hairy clypeus, etc., but differs in the color of the legs, etc.

(18.) **Diadasia rinconis** n. sp. ♀.—Length 12 mm., anterior wing 9 mm. Black, the pubescence pale ochreous; face nearly square, covered with short, whitish pubescence, more or less failing on lower part of clypeus, though dense on labrum; occiput and cheeks also densely hairy, the occipital hairs more or less ochraceous; vertex shining; clypeus shining, with very large punctures and numerous small ones intermixed; mandibles without any light color; antennæ short, flagellum rufescent beneath, first joint of flagellum slightly longer than second and third together, second very short; maxillary palpi 6-jointed, second longest, then third; fifth and sixth together not so long as fourth. Thorax densely covered with short, pale, ochraceous pubescence, the color becoming brighter on scutellum, and pale mouse-gray on pleura; disc of metathorax bare, dullish, enclosure bounded by an impressed line; tegulæ black, their basal half pubescent. Wings smoky hyaline, nervures piceous, marginal cell with an obscure, suffused brownish streak, starting from the stigma; second submarginal cell very short. Legs black, with fairly abundant whitish or very pale ochraceous pubescence; small joints of the four hind tarsi rufescent; scopa of hind legs abundant, pale ochraceous, conspicuously plumose: tarsi with very dark rufous hairs on inner side, those on basal joint of hind tarsi glittering with a coppery lustre. Abdomen broad, black with broad bands of appressed, short, pale ochraceous pubescence; the first segment pubescent all over, the hairs erect, though short toward base; the bands, which are apical, are on segments 2–4 roundly excavated on each side above, so as to be much narrowed at these points; the fifth segment is covered with similar pubescence, thinner and with naked dots toward the base; the extreme apex and the margins of the ventral segments are clothed with dark fuscous hairs.

Hab.—Rincon, New Mex., three at flowers of *Chilopsis saligna*, July 5, 1896. One had previously visited an *asclepiad*, as shown by the pollen masses adherent to the legs.

I had taken this for a *Synhalonia*, but Mr. Fox wrote me that it was a *Diadasia*, and a subsequent examination of the mouth-parts showed me that he was unquestionably correct.

(19.) **Podalirius californicus** (Cresson) ♂.—Length about 13 mm., anterior wing 9 mm. Head, thorax and first segment of abdomen covered with fulvous pubescence, nowhere mixed with black, dense, except on clypeus and middle of dorsulum, where it is sparse; on the cheeks and underside of thorax the pubescence becomes dirty whitish. Head broad, face nearly square; clypeus, except a black spot on each lateral margin, a supraclypeal transverse band, lateral face-marks shaped something like an *Emarginula*-shell seen from the side, but the ends more produced; labrum, except two large black spots at upper corners, and the narrow apical margin (as also of the clypeus) and mandibles without, except extreme margins, base and apex, bright lemon-yellow; clypeus minutely granular or tessellate, with tolerably close punctures; labrum shiny, subconfluently punctured; vertex sparsely punctured; antennæ reaching a little beyond tegulæ,

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black, the scape yellow in front, first joint of flagellum scarcely as long as second and third together, last joint subtruncate; mesothorax dull, minutely granular, with close, very shallow punctures; tegulæ dark reddish testaceous. Wings hyaline, nervures piceous, marginal cell minutely appendiculate. Legs black, tarsi rufous (first joint of middle tarsi darker), claws black, except their bases; pubescence of legs short, thin, whitish; middle legs slender, their tarsi simple; hind femora and tibiæ greatly swollen, tibia with a short, but stout, rufous, subapical tooth on inner side; first joint of hind tarsi enlarged and flattened, covered with appressed dark rufous hairs within, with the inner margin presenting a very large tooth with a broad base, but acute point (like a rose-thorn), below which, apically, is a small tooth. Abdomen coal-black, with the hind margins of all the segments broadly ivory-white; there is short, inconspicuous, black pubescence on the black portions, but no pale hairs, except the fulvous hairs of the first segment, and appressed silvery pubescence on the hindmost portion of the sixth segment and covering the apex, the same silvery pubescence being continued up the sides of the abdomen beneath.

Hab.—Two at flowers of *Cæsalpinia falcaria* in the grounds of the Canaigre factory, Deming, New Mex., July 9, 1896.

This resembles *P. cleomis*, but is at once distinguished by the face-markings, the color of the pubescence, etc. From *P. tricolor* it will be known by the legs. From *P. tarsatus* by the want of black pubescence on the dorsulum, and by the color of the legs. It seemed to differ from Cresson's *californicus* by the pale griseous or whitish pubescence of the legs, the large amount of yellow on mandibles, and the bright yellow face-marks; but Mr. Fox assures me that it is in reality the same species. I give a redescription, as Cresson's description is hardly adequate.

(20.) **Podalirius cardui** n. sp. ♂.—Length about 13 mm., anterior wing 10 mm. Black, with gray pubescence, dense on thorax, except dorsum of metathorax, which is bare and shining; dense also on cheeks and occiput, but sparse on front and altogether absent on the white parts of the face; a few black hairs on vertex, none on thorax. Head broad, face nearly square, vertex somewhat shining, but minutely roughened, clypeus dullish, sparsely punctured above, the punctures becoming larger and closer on apical half; labrum somewhat shining, irregularly and subconfluently punctured; clypeus, except a black spot on each side above, and the narrow anterior edge, a transverse supraclypeal band, lateral face-marks shaped like the side view of a shoe with a pointed toe and a large flap; labrum, except a black spot on each side above, and the narrow anterior margin, a large subpyriform spot on mandibles, and a large elongate mark on scape, all ivory-white; first joint of flagellum about as long as the second and third together; mesothorax dull; tegulæ large, dark brown, margined with hairs. Wings hyaline, slightly brownish in first submarginal cell, nervures brown. Legs slender, simple, small joints of tarsi more or less rufous; pubescence of legs silvery whitish, hardly more than a sparse fringe on femora, a slight pruinosity on anterior tibiæ, a conspicuous white fringe on outer margin and a smaller one on inner margin of middle tibiæ; hind tibiæ with the whole outer side hairy; tarsi

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with silvery hairs on outer and dark rufous hairs on inner side, those on inner side of basal joint of hind tarsi so dark as to appear black in some lights. Abdomen blue-black, hind margin of first segment narrowly opaque white, hind margins of the remaining segments broadly subtranslucent grayish white; first segment with grayish white pubescence like that of the thorax; remaining segments dorsally seeming bare, but clothed with short, inconspicuous hairs, white on second segment, basally black and subapically white on third segment, black with a very narrow, white, subapical fringe on fourth segment, brown-black on fifth and sixth segments, apical margin of sixth and apex clothed with silvery hairs; venter with a band of white hairs.

Hab.—One at flowers of *Cnicus*, Mr. Clark Rodger's ranch, Lone Mountain, near Silver City, New Mex., July 7, 1896, about 6000 feet. A male *Xylocopa arizonensis* Cr. was visiting the same flowers. The *Cnicus* resembles *ochrocentrus*, but the flowers are of a very beautiful crimson-pink color, such as I have not seen in thistles elsewhere.

P. cardui seems to be nearest to *P. smithii* Cresson, but it differs in the color of the pubescence and the clypeal spots. In the latter character it resembles *P. walshii*, but the tarsi are not as in that species.

(21.) **Epeolus verbesinæ** n. sp. ♂.—Length from 7-16 mm., but this apparent great variation is due in large part to the contractility of the abdomen which may thus differ greatly in apparent length in specimens of the same size; the length of the anterior wing varies from about 6.5-8 mm. Black, with creamy white markings. Legs red. Head short, considerably broader than long; vertex flattened, closely and subconfluently punctured, the punctures becoming larger on front; face, nearly up to level of top of scape, covered with appressed snow-white pubescence, becoming thin on lower part; cheeks with similar, but thin pubescence; a few hairs, bending forward, just behind the middle ocellus; antennæ moderately long, black; the scape and first joint of flagellum dark rufous, sometimes black; funicle minute, scarcely emerging from scape, easily overlooked; first joint of flagellum shorter than third, which is shorter than second; the white pubescence of thorax is arranged much as in other species, but the markings are very distinct and well defined; there is a band, narrowed medially, on hind border of prothorax, two short stripes passing backward on mesothorax, a broken band passing over the tegulæ, narrow bands at hind margins of mesothorax and scutellum, and such a band on postscutellum; the pleura and metathorax, except the hairless enclosure, are also white pubescent; the scutellum is quadrituberculate; enclosure of metathorax smooth in middle and densely punctured at sides; mesothorax densely and confluently punctured; tegulæ dull orange ferruginous. Wings hyaline, with black nervures, outer margins broadly dark gray; second submarginal cell greatly narrowed above, sometimes almost to a point. Legs red, with the usual sparse white pubescence, spurs of middle and hind legs black. Abdomen dull black, with clear-cut, creamy white markings; first segment with a large white triangle on each side, one corner of which joins the band; the bands on segments 1-5 are all rather broadly interrupted in the middle, narrowing subdorsally and the swelling, so that their mesad terminations

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are bulbous; this is most noticeable on the first segment, and becomes less so on each subsequent one, the band on the fifth being almost uniform; laterally the bands are broadened, and that on segment 2 emits a large upward projection, which is apt to get more or less rubbed off: sixth segment with an entire white band, more or less narrowed medially; venter largely silvery pubescent, segments 4 and 5 with short fringes of pale yellowish curled bristles; apex rounded, black; in some specimens is projected a pale testaceous plate, minutely emarginate in the centre, producing a pair of low rounded lobes, laterad of which is a deep notch.

♀.—Length 10 mm.; agreeing with the ♂ in color and ornamentation: pygidial area at apex of abdomen large, rounded, beset with short, brilliantly golden scales, placed some distance apart on a dark field.

Hab.—Fifteen males at the Canaigre factory, Deming, New Mex., on flowers of *Verbesina encelioides* July 9, 1896 (Ckll.). One ♀ taken at Las Cruces, New Mex., by Prof. Townsend several years ago. I have never taken it at Las Cruces myself. It somewhat resembles *E. donatus* Sm., and especially *E. tepanecus* Cresson. Mr. Fox, to whom I sent a specimen, writes: "allied only to *compactus*, but is larger and sculpture of thorax is finer; wings more darkly margined. I am inclined to regard it as a variety of *compactus*, until other specimens have been found." But I have a good series, and the species is certainly not *compactus*. A single example of *E. compactus* was taken at Las Cruces by Prof. Townsend, years ago, and determined for me by Mr. Fox. It differs from *verbesinæ*, in addition to the characters mentioned, in the longer first joint of flagellum, and in the color of the spurs.

(22.) **Melissodes pinguis** Cresson.

A peculiar little species, known in the ♂ by the dark wings with a broad second submarginal cell, black pubescence of dorsum of thorax; pale yellow clypeus, labrum and spot on mandibles; and appressed fulvous pile on abdomen; first joint of flagellum at least half as long as second.

I give a new description of the ♀, as I had some difficulty in identifying it from Cresson's description:

♀.—Length about 8 mm., stout, black. Head and thorax with short, thin, white and mouse-gray pubescence, mixed with black. Abdomen with short fulvous pile, like velvet, but appressed. Head broad, shining, with large punctures, especially large and close on the clypeus, which becomes subcancellate; pubescence of face sparse, grayish, some black hairs between the antennæ, vertex with black hairs, occiput and cheeks with short white hairs; antennæ reaching to tegulæ, wholly black, first joint of flagellum larger than the two following together. Thorax shining, with large close punctures; dorsal pubescence thin and black, more dense on scutellum; a very few short pale hairs intermixed, sides of metathorax and pleura with grayish white hairs; tegulæ black. Wings fuscous.

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outer margin broadly iridescent, a green band between two pink ones on both wings; apex of front wings shining, a little violaceous in some lights; nervures black, marginal cell shorter than usual. Legs with pale grayish ochraceous pubescence: anterior femora almost naked, but with a spreading tuft of very long whitish hairs near base beneath; basal joints of tarsi with shining orange rufous hairs on iner side; brush of hind tarsi rufous. Abdomen short and stout; base of first segment with a thin band of erect pale hairs, no distinct bands, but second segment, to a large extent, and third and fourth segments entirely covered with short fulvous pile, fifth segment covered with pale ochraceous hairs; the extreme hind margin of the second segment has a very narrow band of fulvous pile, which is noticeable, through the segment itself not being covered like the following two; there is a white substance, which I do not understand, in the suture between the second and third segments.

Var. **velutinellus** ♂.—The abdominal pile yellowish white. This looks like a distinct species, but it flies with the normal ♂, and may be regarded as a dimorphic form of it.

Hab.—San Rafael, Vera Cruz, March 14, ♂. Paso de Telaya, April 7, ♀. All were on flowers of plant No. 9, which Dr. Rose recognises as a species of *Sida*. Collected by Prof. C. H. T. Townsend.

(23.) **Megachile sidalcese** n. sp. ♂.—Length nearly 15 mm., anterior wing 11 mm. Black with white pubescence, that on the face dense and cream color. Head fairly broad, pubescence of face not mixed with black, arranged as in *M. candida* Sm.; vertex closely punctured, with sparse white pubescence, only noticeable when the insect is held sideways; cheeks with white hairs, contrasting with the yellowish tint of those on the face; flagellum dark rufous beneath, last joint not enlarged; first joint of flagellum about as long as the second; mandibles rufopiceous toward tips, with a brush of cream-colored hairs on upper outer margin; strongly tridentate, the lower tooth shorter and so placed that it might be described as on the lower margin: the upper two consisting really of a single broad blade deeply notched at the end; tongue rufous, with its end beset with pale rufous hairs. Thorax dullish, closely punctured, all the pubescence rather dull white, inconspicuous, except a narrow band between mesothorax and scutellum, a small patch behind tegulæ, a patch below tegulæ, hind margin of prothorax very narrowly, two very narrow lines running thence onto mesothorax, and thin long pubescence on prothorax, pleura, metathorax and more or less on scutellum; tegulæ punctured, piceous, with rufotestaceous margins. Wings smoky hyaline, outer margin broadly darker; a narrow dark streak running along costal margin in marginal cell, and a small dark cloud just beyond marginal cell; nervures piceous, marginal cell quite long. Legs with thin, but long white pubescence, black with the tarsi cream color; spines of anterior coxæ long and flattened, a little curved, blade like; femora stout, anterior femora very peculiar; the upper basal half, which rubs against the thorax, is shining pale yellowish with a rufous tinge; the lower apical half, which touches the tibia when the leg is flexed, is cream color, meeting the outer side at an acute angle, the margin smooth and appearing as a conspicuous cream-colored line on the flexed leg: anterior and middle tibiæ more or less cream colored at apex, the apical corners more or less produced into teeth or short spines; anterior tarsi broadened and flattened, first joint hollowed within, somewhat produced at apex, but with no free projection;

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on outer apical margin there is a rounded notch containing a little boss, looking like a rivet joining first and second segments; the segments from the second to the fourth diminish gradually in size, as usual; the hind margin of the tarsus presents a long dense fringe of white hairs, dark fuscous at the ends, or rather dark fuscous hairs growing behind the white ones overtip them and produce the effect described; ridge beneath first joint and joints 2-4 more or less beneath, with dark reddish hairs; tip of claw-joint black at tips and strongly bifid; the other tarsi slender and ordinary, basal joint with a black stripe behind. Abdomen fairly long, subparallel, shining, but closely punctured; first segment with base deeply and broadly excavate, sides and apex frined with long whitish hairs; hind margins of segments 2-5 with very uniform, narrow, snow-white hair bands; seen from above the remainder of these segments seems nude, but seen from the side a thin pubescence is evident, ochraceous tinged on 2 and 3, darker on 4, black on 5; apical segment without appressed pubescence, broadly but not deeply emarginate, the emargination with a low prominence in its centre; a variable number, up to five, small teeth laterad of the emargination; ventral segments with thin bands of long white hairs.

Hab.—On flowers of *Sidalcea malvæflora* at Mr. Clark Rodger's ranch, Lone Mountain, July 7; and at flowers of golden mint Deming, New Mex., July 9, 1896.

It most resembles *M. candida* Sm., *floridana* Rob., *integra* Cr. and *albitarsis* Cr. Mr. Fox observes that it is "of the *pollicaris*, etc. group." [with anterior tarsi of ♂ flattened.—W. J. F.]

(24.) **Ceratina amabilis** n. sp. ♀.—Length 10.5-11.5 mm. Head and thorax a brilliant Prussian green. Abdomen bright carmine. Legs black, the anterior femora bright green behind; an elongate mark on middle of clypeus, bulbous below, a spot on each extreme side of clypeus, a spot on end of anterior femora, and a short stripe on anterior tibiæ cream color; there is no light color on labrum or tubercles; mandibles wholly black, strongly tridentate at tips, the middle tooth considerably the longest; face with large confluent punctures; front above antennæ more or less dark æneous; antennæ short, wholly dark; cheeks with a broad band of punctures running down the middle, leaving a narrow, smooth band just behind the eyes; mesothorax strongly punctured, with a median, dark æneous, impunctate area; longitudinal impressed lines as in *eximia;* scutellum with four small, round, dark purple spots, two on disc and one on each extreme side; base of metathorax granular; tegulæ transparent, shining, orange testaceous. Wings smoky, quite dark, nervures and stigma piceous; marginal cell somewhat shorter, comparatively, than in *nautlana*. In *nautlana* the radial nervure, from the stigma to the junction with the third transversocubital, is distinctly shorter than the part beyond, whereas in *amabilis* the reverse is the case, though not so conspicuously. Legs with thin, pale grayish pubescence, orange rufous on inner side of tarsi; spurs of hind tibiæ large, dark reddish piceous, the anterior one shorter and hooked at the end. Abdomen strongly, but not so very closely punctured; first segment, except hind margin, olive-green; last two segments rugose.

Hab.—San Rafael, Vera Cruz, March 14 on plant No. 11; March 16 on plant No. 14 (*Ipomœa*). Paso de Telaya, Vera Cruz, March

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30, on plant No. 21, which seems to be a *Canna*. All collected by Prof. C. H. T. Townsend, 1896.

Nearest to *C. eximia* Sm., but larger, legs not ferruginous, etc.

(25.) **Ceratina nautlana** n. sp. ♂.—Length about 4.5 mm., shining dark olive-green, strongly punctured; clypeus entirely, labrum except a spot on upper border, and an oblong spot on each side, a small spot on mandibles and the tubercles cream color or pale café-au-lait; small joints of tarsi more or less rufescent; antennæ piceous, flagellum not pale beneath; tegulæ shining, piceous. Wings hyaline, slightly dusky toward the apex, nervures and stigma piceous; face somewhat narrowed below, with very large punctures; clypeus not punctured, but irregularly grooved; mandibles bifid at tips; a partly single, partly double row of punctures just behind the eyes, behind which the cheeks are broadly smooth and impunctate; base of metathorax dark bluish green, minutely irregularly wrinkled, so as to seem granular; hind femora angled below, but hardly so strongly even as in *dupla;* there may be a well-developed pale stripe on anterior tibia.

♀.—Length 5 mm., similar to ♂; clypeus with only an oblong pale mark, labrum black; mandibles dark rufous medially, bifid as in ♂; dark parts of clypeus with large punctures; cheeks with a triple row of punctures behind eyes, then smooth.

Hab.—San Rafael, Vera Cruz. The ♀ March 12; the ♂ March 9, two on *Bidens* (C. H. T. Townsend). The name of the species is derived from the Rio Nautla, which runs by San Rafael.

Near to *C. strenua* Sm., but differs in the dark tibiæ, antennæ, tegulæ and nervures. The punctuation of the cheeks is very characteristic and distinguishes it at once from a very similar species found in New Mexico.

(26.) **Exomalopsis sidæ** n. sp. ♀.—Length 8 mm., rather stout, very shiny. Head, thorax and legs black. Abdomen red; face about square, orbits parallel, vertex smooth and impunctured, clypeus rather obscurely punctured; face with sparse, appressed, white pubescence, a dense, suberect, brush of the same just above the antennæ; vertex with a few erect hairs, which, in the specimen described, have entangled a mass of *Sida* pollen; labrum with a fringe of yellowish hairs; mandibles simple, grooved without, dark rufous medially; first three joints of maxillary palpi conspicuously stouter than the other three; flagellum dark brown beneath, funicle oval. Thorax sparsely punctured, nearly nude, except lines or bands of white pubescence along hind margins of prothorax and scutellum, and covering postscutellum, and similar pubescence on tubercles, pleura, and more or less on sides of metathorax; tegulæ testaceous. Wings hyaline; stigma pale orange-brown, nervures fuscous, contrasting, costal nervure black, second submarginal cell nearly square; venation as in *E. solani;* small joints of tarsi rufous. Legs with white pubescence; the abundant scopa of hind legs pale fuscous, very strongly plumose, carrying an enormous quantity of the pale yellow pollen of the *Sida*. Abdomen pyriform, almost impunctate, rufous; first two segments bare and shining, except a patch of appressed white pubescence on each side, and erect white hairs at base of first; third and fourth seg-

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ments almost covered with appressed white pubescence, fifth with long, depressed, white hairs; extreme apex with some fuscous hairs; pygidium transversely lineolate; ventral segments with thin fringes of oblique pale hairs, which carry very little pollen.

♂.—Length about 7 mm., wholly shining black, except the flagellum rufescent beneath, the claw-joints of tarsi rufous, the mandibles medially dark rufous; and the very broad low clypeus and the labrum wholly pale primrose yellow; dorsum of thorax somewhat more hairy than in the ♀, but the abdomen above entirely nude, except a short lateral white hair band on segment 5, and a complete band on segment 6; segments 3–5 conspicuously punctured, second with very minute, sparse punctures; the hind legs have quite long white hairs, which entangle a small quantity of pollen.

Hab.—On flowers of *Sida hederacea*, Mesilla, New Mex., July 21, 1896, ten females, one male. A very distinct species, known by the black male, and female with red abdomen.

(27.) **Exomalopsis penelope** n. sp. ♀.—Length 7 mm. Black, shining, sparsely pubescent; vertex shining, impunctate; ocelli in a very slight curve; front with suberect grayish white hairs; face with appressed, plumose, white pubescence, conspicuously denser at sides; clypeus with large, not very close punctures, and minute ones in between; mandibles rufous, except at base, short and blunt, simple; cheeks with thin, dull white pubescence; flagellum, except the first joint, brown beneath; mesothorax strongly punctured, its anterior half with inconspicuous brownish gray pubescence, its hind half bare; hind margin of prothorax and tubercles with rather dense, dull white pubescence; a band on hindmost half of scutellum, and an oval patch on postscutellum of light orange rufous pubescence, very conspicuous; sides of metathorax and pleura with dull white pubescence, finely plumose; tegulæ piceous. Wings hyaline, nervures and stigma ferruginous, costal nervure black; first recurrent nervure joining the second transversocubital; second recurrent joining third submarginal cell at its end. Legs black, with dull white pubescence, small joints of tarsi rufous; basal joints of tarsi within with orange rufous pubescence, the brush of hind tarsi being of the same color; scopa of hind legs wholly pale, copious, yellowish, or light rufous, its color hard to see because it is filled with orange pollen. Abdomen short and broad, first segment excessively shiny, impunctate, base of second with fine, close punctures; base and sides of first segment with thin gray pubescence, second segment with a very broad V of white pubescence on each side; third and fourth apparently fasciate, but the hair-bands visible only at the side, otherwise covered by the retraction of the segments; fifth covered with white hairs; venter rather thinly pubescent.

♂.—Smaller, with the abdomen narrower and more tapering; face covered with white pubescence; flagellum entirely rufous beneath, first joint about half as long as second; mesothorax more sparsely punctured; tegulæ clear rufous. Wings slightly dusky at apex; scutellum and postscutellum with the orange rufous pubescence not always obvious, but sometimes so, and the pubescence of the anterior part of the mesothorax also dark orange rufous; all the tarsi rufous, middle tibia with a rufous spot at end; basal joint of hind tarsus with long, conspicuously plumose, fulvous pubescence, which also intrudes somewhat on to the tibia; the outer side of the basal joint is minutely speckled with black. Abdo-

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men quite strongly punctured, including the first segment; continuous pale hair-bands on segments 2-6.

Hab.—San Rafael, Vera Cruz, one female on plant No. 34, July 3; seven males on plant No. 31 (*Cardia*, probably *C. ferruginea*) last of June. Collected by Prof. C. H. T. Townsend, 1896.

Allied to *E. solani*, and still more to *E. tarsata* Smith from Santarem.

POSTSCRIPT ON AUGOCHLORA.

I found considerable difficulty in determining the species of *Augochlora* described by F. Smith, especially as there was no indication of the spur-character, which divides the species into two groups. I wrote to Mr. E. A. Smith, suggesting that it would be a great convenience to students if the types in the British Museum could be examined with reference to this character, and the result published. With great promptness Col. C. T. Bingham, to whom this suggestion was communicated, examined the types, and he has most kindly sent me the report which I give below.—T. D. A. C.

"The types of the following *Augochlora* are in the Museum, and these I have carefully examined and have arranged them under Robertson's two sections."

Hind calcar of hind tibia simple or minutely ciliated.

1. A. electra *Sm.*
2. A. artemisia *Sm.*
3. A. regina *Sm.*
4. A. festiva *Sm.*
5. A. gratiosa *Sm.*
6. A. viridula *Sm.*
7. A. fervida *Sm.*
8. A. callisto *Sm.*
9. A. acis *Sm.*
10. A. feronia *Sm.*
11. A. titania *Sm.*
12. A. festiva *Sm.*
13. A. alcyone *Sm.*
14. A. nana *Sm.*
15. A. thalia *Sm.*
16. A. flammea *Sm.*
17. A. aurata *Sm.*
18. A. briseis *Sm.*

Cotypes only in Museum:

1. A. sumptuosa *Sm.*

Hind calcar of hind tibia pectinate.

1. A. pandora *Sm.*
2. A. lucephala *Sm.*
3. A. vesta *Sm.*
4. A. fulgida *Sm.*
5. A. splendida *Sm.*
6. A. lucidula *Sm.*
7. A. acidalia *Sm.*
8. A. berenice *Sm.*
9. A. deidemia *Sm.*
10. A. atropos *Sm.*
11. A. calypso *Sm.*
12. A. chryseis *Sm.*
13. A. læta *Sm.*
14. A. lucidula *Sm.*
15. A. habescens *Sm.*
16. A. aspasia *Sm.*
17. A. aurora *Sm.*

Cotypes only in Museum:

1. A. daphnis *Sm.*
2. A. resplendens *Sm.*

Col. C. T. BINGHAM, in litt., Sept. 2, 1896.

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THE BEES OF THE GENUS HALICTUS FOUND IN NEW MEXICO.

I.—SPECIES WITHOUT ANY GREEN OR BLUE.

BY T. D. A. COCKERELL.

(A.) Tolerably large black species with hair-bands on the abdomen.

(1.) Females with the cheeks armed beneath, males with the clypeus and legs partly yellow; stigma honey-yellow.

Halictus ligatus Say.

A common and rather variable species; collected as follows:

Las Cruces, New Mex., on *Sisymbrium canescens* April 12, 1895, ♀, several; on *Solidago canadensis* Nov. 15, 1895, ♀; on *Salix* May 3, 1896, ♀; on plum March 23, 1896, ♀; on *Sphæralcea angustifolia* September 22, ♂; on garden *Cosmos* October 19, ♂; on *Bidens* October 19, ♀; on *Bigelovia wrightii* September 23, ♀; on *Aphanostephus ramosissimus* April 26, ♀, several.

Mesilla, New Mex., females flying in numbers about and settling on *Actinella richardsoni* by the river, May 10, 1896. They were loaded with the orange pollen.

Santa Fé, New Mex., July 6, three females. These are smaller than the average of those from the Mesilla Valley. Also one ♂, July 27, 1895, on *Rudbeckia laciniata*.

(2.) Females with the cheeks unarmed.

(a.) Stigma honey color, or at least not dark brown.

(*a.*) Tegulæ dark piceous, larger species.

i. Wings tinged yellowish.

Halictus forbesii Rob.

Found by Prof. E. O. Wooton on Ruidoso Creek, 6400 feet, on *Pentstemon* July 8, two females; and at 6600 feet, on *Erysimum*, July 3, one female. I took one at Bernalillo, New Mex., at the beginning of July. I have never seen it in the Mesilla Valley.

ii. Wings not tinged yellowish.

Halictus bardus Cress.

One ♀, Little Mountain, Mesilla Valley, New Mex., on *Streptanthus carinatus*, March 26, 1895. It is very near to *forbesii*, but differs thus:

forbesii.	**bardus.**
Wings tinged yellowish.	Wings clear, not at all yellowish.
Stigma without a dark margin.	Stigma darker, with a dark margin.
Nervures honey color.	Nervures fuscous.
Hair bands of abdomen more or less tinged with ochraceous.	Hair bands of abdomen white.

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The characters assigned to *forbesii* are not very clearly indicated in Mr. Robertson's description, but I have an example of that species from Algonquin, Ill., collected by Dr. Nason and sent to me by Mr. Baker, which agrees with the specimens from New Mexico.

β. Tegulæ dark testaceous, smaller species.

Halictus amicus n. sp. ♀.—Length about 8.5 mm. Black, with short, dirty white pubescence, which gives it the appearance of being dirty. Head rather large and broad, face and cheeks with sparse feathery pubescence, most conspicuous at sides of face and just behind the eyes, hairs on front margin of clypeus slightly tinged with golden; antennæ wholly black, flagellum minutely punctured, its first joint very short, even a little shorter than second; clypeus rather sparsely punctured; front so closely punctured as to be dull and granular in appearance. Thorax tolerably hairy at sides, on postscutellum and at sides of scutellum, and on metathorax, except the enclosure; postscutellum hoary; mesothorax shining, with large, moderately close punctures, parapsidal grooves distinct: scutellum very shining, the punctures more or less failing centrally; enclosure of metathorax semilunar not truncate, very minutely wrinkled, bounded by an obtuse ridge. Legs black, claws rufescent, first joint of hind tarsus with a curious little brush of bright rufous hairs at its tip; tegulæ testaceous. Wings hyaline, beautifully iridescent, nervures and stigma honey-yellow or pale ferruginous, costal nervure black, second submarginal cell not longer than broad. Abdomen shining, minutely punctured, margins of segments slightly testaceous; first three sutures with more or less distinct hair bands, the first mostly on the base of the second segment, the second somewhat failing in the middle, the third about equally on the adjoining segments, broad and entire: the bands are not dense like those of *forbesii*, nor have they any yellowish tinge; the segments after the second are pruinose with scattered hairs; hairs of apex whitish; the development of the hair-bands varies: the second may be continuous and broad. When the abdomen is much extended the shining articulating surfaces of the bases of the segments appear, dividing the bands into two, the strong basal and the more feeble apical.

Hab.—Mesilla Valley, New Mex., on the College Farm; two on *Sisymbrium* March 23 and 31, 1897; six on plum March 23, 25 and 26, 1896.

From *H. amicus:*

H. arcuatus Rob. differs at once by the much more strongly wrinkled enclosure of metathorax, but it is a very similar species.

H. farinosus Sm. differs by its larger size, the interrupted rim of the metathoracic enclosure, and the fulvous anal rima.

H. capitosus Sm. differs by the pale, fulvous, thoracic pubescence, fusco-hyaline wings, etc. This is now considered to be the same as *ligatus*.

H. desertus Sm. differs by the black tegulæ, etc.

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(b.) Stigma dark brown or black.

i. Tegulæ testaceous; metathoracic enclosure truncate behind, with a sharp rim.

Halictus sisimbrii Ckll.—Superficially this is very like *forbesii* and *bardus*, but it is at once distinguished from both, not only by the tegulæ, but by the much more coarsely sculptured metathoracic enclosure; the type specimen was not at all characteristic, being largely denuded of its pubescence; when in good condition the insect has four broad white hair-bands on the abdomen, one at the middle of the first segment, the others at the bases of segments 2-4. In one example (Ckll. 876) the dorsal pubescence of the thorax is quite dense and fulvous, while the abdominal bands are tinged with ochraceous and the second is more produced downward at the sides; possibly this may represent a distinct species, but the structural characters agree, and I believe we have to do with only one variable species.

Hab.—Mesilla Valley, New Mex., College Farm, on *Sisymbrium* April 16, ♀; Little Mountain, on *Streptanthus carinatus* March 26, 1895, ♀; Las Cruces, June 9, 1894, ♀ (Ckll. 876); College Farm, on *Melilotus indica* May 1, 1895, ♀. At Watrous, New Mex. (6200 feet altitude), on July 13, I took a ♂, which appears to belong to this species, differing only in the ordinary sexual characters.

ii. Tegulæ black; metathoracic enclosure semilunar.

Halictus angustior n. sp. ♀.—Length 8.5 mm. Black, narrow in form, looking rather like a ♂; face narrow, clypeus produced, pubescence on face and cheeks whitish, merely enough to give them a dusty appearance; margin of clypeus with long, pale, rufous hairs, mandibles rufescent at tips; antennæ wholly black, rather long, reaching as far as tegulæ, first joint of flagellum longer than second; clypeus granular, with tolerably sparse punctures; face and front rough and dull, a group of shallow pits adjacent to orbit; pubescence of thorax tinged with ochraceous, very scanty, short, most noticeable on pleura and sides of metathorax; postscutellum conspicuously tomentose; mesothorax dullish from a microscopical sculpturing, closely punctured, median and parapsidal grooves distinct; the sculpturing, viewed with a compound microscope, is seen to consist of minute striæ; scutellum closely punctured, but tolerably shining; enclosure of metathorax semilunar, rather shiny, irregularly wrinkled or almost subcancellate all over; tegulæ dark piceous, appearing black. Wings smoky hyaline, grayish, not yellowish, iridescent; nervures and stigma piceous; inner spur of hind tibiæ simple, outer spur with five teeth, the last two very minute. Abdomen comparatively long and narrow, shining, punctures minute and sometimes hardly visible; the second and following segments with a basal grayish white hair-band, narrowed in the middle; the mandibles have a short denticle within; the tegulæ have a rufous spot.

Hab.—Las Cruces, New Mex., two on a plant supposed to be *Flaveria*, garden of my house, Aug. 25, 1895.

In the shape of the head this reminds one of *H. foxii* Rob., but that has testaceous tegulæ and a honey-colored stigma. *H. pectoraloides* has a shorter head, shiny mesothorax, and differently sculptured metathorax.

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Another specimen of *angustior* was taken at Mesilla, New Mex., May 9, 1896, on *Malacothrix fendleri* Gray in the Woodlands orchard. This has the abdominal bands lacking, except for patches at the extreme sides, even these ill-developed, and thus looks very like *pectoraloides*, indeed, but it is at once separated by the duller mesothorax and first abdominal segment. The resemblance to *pectoraloides* is further increased by the abdominal segments being retracted, so that the abdomen loses its elongate form.

(B.) Small, or moderately small black species, without continuous hair-bands on the abdomen, or only one band continuous.

(1.) Females.

(a.) Abdomen black, the segments not margined with testaceous; first segment impunctate; lateral white hair-patches present; stigma piceous.

Halictus pectoraloides Ckll.

A very abundant species, taken as follows:

(a.) Las Cruces, New Mex., on *Sisymbrium* April; on *Solanum* July; on *Aphanostephus ramosissimus* (formerly reported in error as *Erigeron strigosus*) April 26; thirteen on *Melilotus indica* College Farm, May 1; on white *Aster* June 16; two on *Salix* May 3, 1895, and others on *Salix* May 3, 1896; on *Biscutella wislizenii* March 9; on supposed *Flaveria* August 25.

(b.) Mesilla, New Mex., on *Actinella richardsonii* May 10, 1896.

(c) Roswell, New Mex., one on plum April 14, 1896.

(d.) Santa Fé, New Mex., August 5, one only. It appears to be rare at Santa Fé.

For the supposed ♂ see below.

(b.) Abdomen rather brownish (piceous), the hind margins of the segments more or less testaceous, first segment more or less punctured, if only microscopically; stigma honey color.

a. Flagellum more or less testaceous beneath, tarsi rufous, first segment of abdomen transversely striate.

Halictus subobscurus Ckll.

Not very common. Las Cruces, April, on *Sisymbrium;* also one on August 14. Santa Fé, one on July 25, 1895. The last mentioned shows hair-bands on bases of segments 2 and 3, that on 2 interrupted.

(*β.*) Flagellum wholly dark, tarsi dark, first segment of abdomen not transversely striate.

Halictus lusorius Cress.

One from the west fork of the Gila River, New Mexico, July 16

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(C. H. T. Townsend). The pubescence of the head and thorax is rather pale ochraceous than grayish, and the abdomen has scattered, very minute punctures, visible with a compound microscope. It is possible that the specimen represents a species distinct from *lusorius*, but Cresson's description so nearly fits it that the identity may be assumed until the contrary is proven.

(2.) Males.

(a.) A transverse yellow patch on lower part of clypeus, antennæ very long.

Halictus angustior n. sp. (♀ supra)

What I suppose to be probably the ♂ of *angustior* differs from the ♀ by its slender form, very narrow subcylindrical abdomen, very long antennæ (which are wholly dark), transverse yellow patch on lower part of clypeus, narrower face, mesothorax more shining and sparsely punctured. Wings clear, metathorax with a more elevated rim round the enclosure. Abdomen without hair bands. One specimen on *Rhus*, Ruidoso Creek, New Mex., 6600 feet, July 10 (E. O. Wooton, 172). The tegulæ, stigma and nervures are all dark piceous, practically black.

(b.) Clypeus wholly dark.

α. Abdomen long and cylindrical, strongly punctured; stigma brown.

Halictus sp.

In the shape of the abdomen this resembles much the supposed ♂ of *angustior*, but it is a smaller insect, with much shorter antennæ, face covered with white pubescence below the level of the antennæ. I cannot identify it with anything described, but defer a name and full description in the hope of obtaining the ♀. The tegulæ are testaceous.

Hab.—Santa Fé, New Mex., July 16, on white umbelliferous flowers, and August 2 on *Clematis ligusticifolia* (Ckll. 1481, 4056). Ruidoso Creek, New Mex., 6400 feet, July 8, on *Asclepias* (E. O. Wooton, 94).

β. Abdomen not so long and narrow, stigma darker.

i. A small species with a hoary face.

Halictus pectoraloides Ckll. (♀ supra).

What I have supposed to be the ♂ of *pectoraloides* differs by its smaller size, much more slender build, punctured abdomen, and dark sepia-brown flagellum. The metathorax is very shiny; the tegulæ are piceous with a testaceous spot; the antennæ are only moderately long. I felt sure that this was the real ♂ of *pectoraloides* until I

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noted that it is quite different from the ♂ of *quadrimaculatus* as described by Robertson. The females of *pectoraloides* and *quadrimaculatus* are so much alike that it is hard to believe that they would have quite different males. The punctuation of the abdomen is not nearly so strong as in the Santa Fé insect just described above.

Hab.—Las Cruces, New Mex., on *Solidago canadensis* November 15; and on supposed *Flaveria* August 25.

ii. A comparatively large and stout species, the face not covered with white pubescence.

Halictus sisymbrii Ckll. (♀ supra).

What I suppose to be the ♂ of this is quite stoutly built, like a ♀, larger than *pectoraloides*, with more or less broadly interrupted abdominal hair-bands, which are oblique and best developed at the sides. The abdomen is strongly punctured; the stigma is rufescent with a dark margin; tegulæ testaceous. Length 8 mm.

Hab.—Watrous, New Mex., July 13; two specimens.

(c.) Small, slender species, with the thorax black and the abdomen largely rufous.

Halictus semicoloratus n. sp. ♀.—Length about 4.5 mm. Slender, head and thorax black. Abdomen orange rufous, largely suffused with blackish on the third and following segments. Head fairly large, broader than long; face covered with white appressed pubescence; the lower half of the clypeus bare, shining, with large, scattered punctures; mandibles rufous; front dullish, with rather large very close punctures; antennæ short and stout, flagellum sepia-brown, its first joint broader than long. Thorax rather small, the white pubescence sparse; mesothorax shining, with large, moderately close punctures; enclosure of metathorax longitudinally ribbed, bounded by an obtuse, but prominent rim. Legs brown-black, hind tarsi pallid; tegulæ testaceous. Wings rather short, hyaline, beautifully iridescent, nervures and stigma piceous, second submarginal cell very narrow. Abdomen long and narrow, shining, without hair-bands, or any conspicuous pubescence, punctured, but the punctures very minute.

Hab.—Las Cruces, New Mex., on *Sisymbrium* March 23, 1896. A very distinct species.

Halictus sp. ♂.—Similar to *semicoloratus*, but larger, the antennæ long and black; the abdomen black, with the apical sides of first segment, the base and sides of second, the sides of third, and the entire venter of 2 and 3 deep rufous; mandibles rufous only at tips; tegulæ shining, piceous; enclosure of metathorax with the longitudinal ridges close and wrinkled. Wings beautifully iridescent; second submarginal cell very narrow.

Hab.—Santa Fé, New Mex., on *Solidago canadensis* August 2 (Ckll. 4045).

A species very near to the last, but surely distinct. A name is not now given, as it is hoped that the ♀ may be found, and the validity of the species thus confirmed.

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VESPINÆ OF THE UNITED STATES AND CANADA.

BY H. W. LEWIS, B. S.

In the preparation of this paper I have followed the classification of M. de Saussure in his "Synopsis of the American Wasps," 1875, which has also been adopted by Dalla Torre in his "Catalogus Hymenopterorum," 1894. Both of these gentlemen regarded this group of insects of subfamily value, while Mr. Cresson, in his "Synopsis of the Hymenoptera of America, North of Mexico," considered it of family rank.

I take this opportunity of expressing my thanks to Prof. Fernald, in whose laboratory, and under whose direction, this paper was prepared during my senior year at the Massachusetts Agricultural College; and also to Messrs. Cresson, Skinner and Fox for their advice and assistance while studying the Vespinæ in the collection of the American Entomological Society. I also wish to thank Prof. Lintner for the loan of his entire collection of these insects for study; Mr. Henshaw, for the opportunity of examining the collection in the Museum of Comparative Zoology; and Mrs. Fernald, for valuable assis ance in translating.

The species found in this subfamily are common to nearly every part of the world, and are very numerous in individuals, especially in the warmer climates. The Vespinæ of the world are divided into nineteen genera. but so far as is now known only three of these — *Vespa*, *Polistes* and *Polybia* are found in our territory.

General Habits.

The Vespinæ are social insects, having three forms of individuals in a colony—males, females and workers. They are natural paper. makers, manufacturing their paper from small fibres which they detach, by means of their strong mandibles, from the surface of wood exposed to the weather. They mix these fibres with a fluid substance from their mouths and work them into thin sheets to form the cells and coverings of their nests. The paper made in this way is quite tough and weather proof. The inner cells are hexagonal, while those near the outer edge are more or less circular. The num-

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ber of cells in a nest varies with the size of the colony, and they are so arranged that the open end is generally downward. The nests of *Polistes* and *Polybia* contain but one layer of cells, while those of *Vespa* may have several layers, one above the other, with a narrow space between them. The nests of *Vespa* and *Polybia* have the cells surrounded more or less completely by a paper covering, while the cells of *Polistes* are not enclosed. The nests are all made by a single colony in one season and all but the fertilized females perish. Late in the Fall, after all the flowers are gone, if there are any larvæ or partly grown wasps in the nest, it is said that they are stung to death by the workers, who seem to realize that they would die from the cold and starvation if this was not done.

At the approach of Winter the fertilized females crawl into some sheltered place and remain in a dormant state till the warm weather in the Spring awakens them from their sleep. They at once construct a nest with ten or more cells, lay an egg in each, and when the larvæ hatch they feed and care for them until they transform into perfect insects. This first brood consists of workers only, and these at once take up the task of enlarging the nest and caring for the larvæ; for after this first brood has developed the female does nothing but lay eggs. In the care of the young and the preparation of their nests, the wasps very closely resemble the honey bee in its habits. The workers are undeveloped females produced, according to some authorities, by the amount and quality of the food given to the larvæ. Later in the season the females lay eggs which develop into perfect males and females; these mate, the males and workers die, and the females hibernate through the Winter.

Dalla Torre gives a complete synonymy of all the species of this family in his "Catalogus Hymenopterorum," vol. ix, and I have therefore omitted all synonymy from this paper.

General Characters of the Vespinæ.

The Vespinæ are easily determined by having the wings folded longitudinally when at rest, the prothorax prolonged backward to the base of the wings, eyes reniform, and intermediate tibiæ with two apical spurs. The males have thirteen segments in the antennæ and seven in the abdomen, while the females have only twelve segments in the antennæ and six in the abdomen. The workers resemble the females, but are generally much smaller.

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Table of Genera.

1. Abdomen petiolate ..... **Polybia.**
   Abdomen not petiolate ..... 2.
2. Abdomen fusiform, pointed at the base ..... **Polistes.**
   Abdomen conical, truncate at the base ..... **Vespa.**

General Characters of the Genus Vespa.

The species of *Vespa* are quite variable in their markings, and they are all more or less punctured and hairy. The metathorax is very short and truncate and the abdomen is sessile, broad and truncate at the base, tapering gradually toward the posterior end. The basal nervure joins the subcostal some distance before the base of the stigma. These wasps are commonly known as hornets, yellow jackets or wasps. Some make their nests in the ground, while others attach them to the branches of trees or shrubs, or even under the eaves of buildings, and in other more or less protected places. The nests constructed above ground are more or less globular and entirely surrounded by at least two sheets of their peculiarly manufactured paper. As the number of individuals in a nest increases and they become crowded for room they tear away the inner layers and add others to the outside.

Table of Species.

1. Eyes extending nearly or quite to the base of the mandibles ..... 7.
   Eyes remote from the base of the mandibles ..... 2.
2. Species black and white ..... 3.
   Species black and yellow ..... 5.
   Species brown and yellow ..... **crabro.**
3. Flagellum ferruginous beneath ..... **maculata.**
   Flagellum all black ..... 4.
4. The broad white borders on the third, fourth and fifth abdominal segments deeply notched or divided ..... **borealis.**
   All the segments of the abdomen narrowly bordered with yellowish white. **marginata.**
5. Metathorax bearing two yellow spots behind ..... **fernaldi.**
   Metathorax not bearing two yellow spots ..... 6.
6. With yellow triangular spot beneath the base of the fore wing. **diabolica.**
   Without a yellow spot beneath the base of the fore wing ..... **media.**
7. Species black and white ..... **consobrina.**
   Species black and yellow ..... 8.
   Species black, yellow and brown ..... **rufa.**
8. Mesothorax bearing two longitudinal yellow lines ..... 13.
   Mesothorax not bearing two longitudinal yellow lines ..... 9.
9. Antennæ of female and worker all black ..... 11.
   Male, female and worker with scape yellow in front ..... 10.

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10. Male, female and worker with scutellum, postscutellum and metathorax each having two yellow spots ..... **occidentalis.**
    Male, female and worker with scutellum and postscutellum only having two yellow spots ..... **infernalis.**
    Male, female and worker with scutellum only having two yellow spots...12.
11. The yellow in sinus of eyes connected, or nearly connected with the frontal spot..... ...**germanica.**
    The yellow in sinus of eyes not connected with the frontal spot.**vulgaris.**
12. Second abdominal segment bearing only a narrow, apical, yellow border. **vidua.**
    Second abdominal segment bearing a wide, apical, yellow band, with a deep median black notch, from which two lateral black teeth arise. **infernalis.**
13. First abdominal segment entirely dark yellow or brownish.....**carolina.**
    First abdominal segment not dark yellow or brownish .....14.
14. Tibiæ and tarsi bright red .....**macfarlandi.**
    Tibiæ and tarsi not bright red.....15.
15. Posterior margin of second cubital cell equal to third.....**cuneata.**
    Posterior margin of second cubital cell twice the length of the third. **sulphurea.**

Vespa serripes Fab., *V. squamosa* Drury and *V. tibialis* Oliv., are unknown to me, and the descriptions of them are so incomplete that I cannot place them in the table. I am in receipt of a letter from M. de Saussure in which he writes that *Vespa communis* Sauss. is the same as *V. vulgaris*, and *V. pennsylvanica* Sauss. is the same as *V. germanica*, and I have therefore omitted these names as belonging to the synonymy.

Description of the Species.

Vespa crabro Linn. ♀.—Eyes remote from the mandibles. Head ferruginous brown, large, convex, longer than broad, with the tips and inner sides of mandibles, a stripe between the antennæ and a spot above the base of each black; clypeus amber-yellow; antennæ brown, with the first three joints brown ferruginous. Thorax dark brown, with nearly the whole surface of the prothorax above, the tegulæ, and generally the scutellum and a stripe on the postscutellum, ferruginous brown. Abdomen with the first segment dark brown, an irregular stripe on the anterior border not reaching the sides ferruginous brown, and a narrow stripe on the posterior border dull yellow; second segment dark brown, with a broad, apical, yellow border deeply indented medially, and with a small, rounded indentation on each side; the remaining segments are yellow, with lateral brown indentations. Legs ferruginous brown, with the coxæ, trochanters and base of femora, except a ferruginous spot on the coxæ and trochanters, dark brown or black. Wings amber, with the nervures brown. Length 22 mm.

♂.—Like female, except the second abdominal segment, which has a much narrower yellow border with a shallow median indentation. Length 18-20 mm.

Worker.—Differs from female only in being smaller. Length 18-20 mm.

Hab.—Europe, New York (Angus), Maryland (Saussure in litt.).

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V. media Retz. ♀.—Eyes remote from the mandibles. Head reddish yellow, with the tips of the mandibles, the region of the ocelli and about the base of the mandibles, dark brown or black; antennæ black above, except the first two joints of the flagellum, which are ferruginous, beneath ferruginous, with the scape reddish yellow in front. Thorax black, with the prothorax, tegulæ, two indistinct, longitudinal stripes on the mesothorax, the scutellum and postscutellum brown. Abdomen black, with the apical border of the first and second segments reddish yellow, notched medially and the latter with a notch on each side; third, fourth and fifth segments broadly bordered with reddish yellow, with a median notch and black spot on each side; anal segment entirely yellow. Legs reddish brown, except the middle and hind coxæ, the hinder part of the fore coxæ and the base of the femora which are black. Wings reddish. Length 15 mm.

♂.—Clypeus yellow, spotted with black; antennæ as in the female; scutellum black, bearing two yellow marks. Abdomen above with the base of all the segments black and the posterior borders yellow; underside of the abdomen similar to the upper, except the first segment, which is entirely black. Length 13 mm.

Worker.—Head black, with the mandibles, except the edges, clypeus except a spot in the middle, a subquadrate spot on the front, sinus of the eyes with a line extending to the clypeus, an irregular stripe behind the eyes yellow; antennæ as in the female. Thorax black, with the posterior edge of the prothorax and a line extending down on each side, a stripe on each side of the scutellum and one on each side of the postscutellum yellow. Abdomen black, with the segments bordered terminally with yellow; all the borders notched medially, and all but the first with an excavation on each side. Legs as in the female. Length 13 mm.

Hab.—Europe, Canada, Vancouver Island (Taylor).

V. ferualdi n. sp. ♀.—Eyes remote from the mandibles. Head black, with the mandibles except the edges, the clypeus, except the edge and a vertical spot in the center, a subquadrate spot on the front, the sinus of the eyes and a partially interrupted stripe behind the eyes yellow; antennæ black, with the scape yellow in front; flagellum ferruginous beneath. Thorax black, with the posterior border of the prothorax, a short line extending down each side, borders of the tegulæ, a large triangular spot under the wings, a linear spot on each side of the scutellum and postscutellum and two spots on the posterior part of the metathorax yellow. Abdomen black, with the first segment broadly bordered apically with yellow, narrowing laterally and broadly indented or interrupted medially; the remaining segments broadly bordered apically with yellow, deeply indented medially and with a large black dot on each side. Legs yellow with the coxæ, except a spot on the front, trochanters, base of femora and a spot on the anterior tibiæ black. Wings hyaline with the nervures brown.

Worker.—Smaller than the female, which it closely resembles; sometimes the lateral dots of the abdominal segments become lateral, rounded indentations. Length 13 mm.

Var. A.—Some specimens have the first abdominal segment yellow with a median and two lateral black indentations.

Var. B.—One specimen has two small, yellow spots on the mesothorax near the scutellum.

Hab.—Colorado.

V. diabolica Sauss. ♀.—Eyes remote from the mandibles. Head black, with the mandibles except the edges, the clypeus except a variable spot in the

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center, a subquadrate mark on the front, sinus of the eyes and a line from it to the clypeus, and a stripe behind the eyes yellow; antennæ black, with the scape yellow in front; flagellum ferruginous beneath. Thorax black, with an interrupted yellow line on the posterior border of the prothorax and a short one extending from it down the anterior border, borders of the tegulæ, a spot under the wings and two spots on the scutellum and postscutellum yellow. Abdomen black, the first segment with a narrow, apical, yellow border, narrowly interrupted medially; the remaining segments with a wide, apical, yellow border, strongly indented medially and notched laterally; in many cases these notches become black spots in the yellow. Legs yellow with the coxæ, except a small spot, trochanters and femora except tips, black. Wings hyaline, with the nervures brown. Length 12.5 mm.

♂.—Same as the female, except the abdomen, the markings of which vary greatly; some have the apical yellow borders of all except the first segment tridentate, others have the lateral indentations changed to spots; between these two extremes there is every gradation.

Worker.—Much smaller than the female; the yellow borders of all but the first abdominal segment are narrower and tridentate. Length 10 mm.

Var. A.—No line on the anterior border of the prothorax.

Var. B.—No line on the anterior border of the prothorax and scutellum only bearing two spots.

Hab.—United States, Canada.

I am inclined to believe that this species is *V. arenaria* Fab., but the description of Fabricius is so incomplete that I do not feel positive.

V. borealis Kirby ♀.—Eyes remote from the mandibles. Head black, with the mandibles except teeth, the clypeus except the outer edges and a variable mark in the center, a subquadrate spot on the front, a narrow line from the sinus of the eyes to the clypeus and a more or less interrupted stripe behind the eyes white; antennæ black, with the scape white in front; body black and white, covered with black and gray hairs. Thorax black, with the posterior border of the prothorax and a short line extending from it down the anterior border, a triangular spot under the wings, two spots on the scutellum and two on the postscutellum white. Abdomen black, sometimes with a very fine white line on the posterior border of the first segment; second abdominal segment with a narrow, apical, white border, interrupted in the middle and slightly broadened laterally; third, fourth and fifth segments with a broad, apical, white border deeply indented or interrupted medially, the third segment with a rounded indentation on each side, which, in the fourth and fifth segments, become dots; anal segment with a white spot on each side. Legs black, with the tarsi, inside of tibiæ and femora, and a spot on the front of the two anterior coxæ white.

♂.—Similar to the female, except the abdomen, which has all the segments bordered apically with white, the first straight, indented or interrupted medially, the others more or less strongly tridentate; sometimes the spots on the postscutellum are absent or very small.

Hab.—United States, New York, Mt. Washington, British Columbia; Amherst, Mass.

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V. maculata Linn. ♀.—Eyes remote from the mandibles. Head black, with the mandibles except the edges, the clypeus except the front edge and a vertical line through the middle, a subquadrate mark on the middle of the front, sinus of the eyes and a broad stripe behind each eye white: antennæ black, with the scape yellow in front, the flagellum ferruginous beneath. Thorax black, with nearly the whole prothorax above, a nearly triangular spot under the wings and a transverse mark on each side of the scutellum and postscutellum white; tegulæ ferruginous with a white spot. Abdomen black, with a white spot on each side of the third and last segments; the fourth and fifth segments have each a broad, white terminal band, more or less completely divided in the middle with a black spot on each side sometimes connected with the black on the front of the segment; the third, fourth and fifth segments have on the underside a white spot on each side slightly notched with black above; anal segment white, with a small black notch on the posterior end. Legs variegated with black and white, the last color dominant on the anterior ones and the black on the posterior ones. Wings somewhat reddish brown, especially along the costa. Length 22 mm.

♂.—Similar to the female; the white of the prothorax is restricted to a stripe on the posterior edge and a short line extending from it down the anterior border on each side; the sixth and seventh abdominal segments are the same as the fifth of the female.

Var. A.—One specimen has an irregular white line on the middle of the posterior border of the first abdominal segment, and on the third segment there are two lateral spots, narrow within and broadening near the edge.

Var. B.—One specimen has no marks on either scutellum.

Worker.—Similar to the female. Length 17–18 mm.

Var. A.—In some specimens the marks on the postscutellum are wanting.

Var. B.—There is no white on either scutellum or on the third abdominal segment.

Hab.—Europe, New York (Lintner), Maine (Fernald), Ottawa (Couper), Vancouver Island (Taylor).

V. marginata Kirby ♀.—Eyes remote from the mandibles. Head black, with the mandibles except the tips, a bilobed spot on the front, a narrow line extending from the clypeus to the sinus of the eyes, and a spot above and behind each eye white; clypeus whitish yellow with a large discoidal black spot in the center; antennæ black, with the scape yellow in front. Thorax black, with a white stripe on the posterior border of the prothorax, sometimes with two small spots on the scutellum and postscutellum. Abdomen black, with each segment, except the last, bearing an apical white border, and all but the first with three slight indentations; anal segment with a white spot on each side. Legs yellowish white, with the coxæ, trochanters and basal half of the femora, black.

♂.—Differs from the female in having a stripe behind the eyes more or less interrupted in the middle, a triangular spot under the wings, two small spots on the scutellum and two on the postscutellum white.

Var. A.—One specimen from Maine is yellowish white instead of white, but the nature of the markings is such that I am confident it belongs to this species.

Hab.—New York (Kirby), Orono, Maine, Canada, British Columbia.

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V. consobrina Saus. (*V. scelesta* Mac F., Trans. Am. Ent. Soc. vol. xv, p. 298) ♀.—Eyes extending to the base of the mandibles. Head black, subtriangular, slightly longer than broad, with the mandibles except the edges, the clypeus except a central trefoil-shaped black spot, a stripe behind each eye, a narrow line in the sinus of the eyes, and a bilobed spot between the antennæ white; antennæ all black. Thorax black, with a line on the posterior edge of the prothorax widely interrupted in front, two lateral spots on the scutellum, border of the tegulæ and a spot under each fore wing white. Abdomen black, the first segment entirely so; second segment with a narrow, interrupted, white border, becoming wider laterally; third segment broadly bordered apically with white and having three indentations; fourth and fifth segments very broadly bordered with white and having two rounded lateral indentations or spots; anal segment with a small white spot on each side; coxæ, trochanters, femora, except tips, black; tips of femora, tibiæ and tarsi, honey-yellow. Wings hyaline, with the nervures brown.

♂.—The abdominal segments narrowly bordered with white, the border of the first segment being narrow and interrupted.

Worker.—Resembles the female: the first abdominal segment has a narrow interrupted border of white, the other segments being more narrowly bordered than in the female and the indentations not so prominent. Length 10.5 mm.

Var. A.—One specimen has a narrow white line on the scape of the antennæ and a black spot on the mandibles.

Var. B.—One specimen has a small white spot on the scape of the antennæ.

Hab.—Maine, New Hampshire, Massachusetts, Connecticut, Pennsylvania, Virginia, Colorado, Montana, Washington (MacFarland), Newfoundland.

V. rufa Linn. ♀.—Eyes extending nearly to the base of the mandibles. Head black, with the mandibles, except the teeth, the clypeus, except the edges, and a vertical stripe in the middle with lateral teeth at the lower end, and a subquadrate spot on the front, a line extending downward from the sinus of the eyes and an interrupted stripe behind the eyes yellow; antennæ all black. Thorax black, with the posterior border of the prothorax, borders of the tegulæ, a spot under the fore wings, two spots on the scutellum and two smaller ones on the postscutellum yellow. Abdomen black, the first segment with a central black spot in front and a yellowish terminal border; second segment brown, with a yellowish terminal border, a black basal border connected with a black median spot extending into the brown, on each side of which is a small black spot; third, fourth and fifth segments with a broad apical band broadly notched medially and with a black spot on each side; anal segment with a large brown spot on each side. Legs yellow, with the coxæ, trochanters and basal half of the femora black. Wings hyaline, with the nervures brown. Length 15 mm.

Worker.—Similar to the female, except that it is smaller in size, and has the terminal borders of the abdominal segments narrower. Length 12 mm.

Hab.—Europe, Canada.

V. vulgaris Linn. ♀.—Eyes extending nearly to the base of the mandibles. Head black, with the mandibles, except teeth, clypeus, except a variable spot in the center, sinus of the eyes and a line from it to the clypeus, a quadrate

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spot on the front and a band behind the eyes sometimes interrupted, and sometimes joining above with the yellow in the sinus of the eyes yellow; antennæ all black. Thorax black, with the posterior border of the prothorax, tegulæ, a triangular spot under the wings, two linear spots on the scutellum and two on the postscutellum yellow. Abdomen black, the first segment with a terminal yellow border notched in the middle. In some specimens there is a yellow line interrupted medially on the anterior border of the first abdominal segment; this line is often enlarged laterally and joined more or less with the terminal yellow border, having a lozenge-shaped spot on the middle of the segment; the remaining segments are broadly bordered terminally with yellow, notched more or less in the middle and with a black spot on each side. Legs yellow, with the coxæ, except a spot on the front, the trochanters and base of femora black. Wings hyaline, with the nervures ferruginous. Length 14 mm.

♂.—Antennæ black, with the scape yellow in front; clypeus yellow with a black spot, or entirely yellow; the yellow borders of the abdominal segments are narrow, slightly tridentate or almost regular; metathorax black. Length 13 mm.

Worker.—Much smaller than the female, and with the terminal yellow borders of the abdominal segments, after the first, much narrower than in the female and tridentate. Length 10 mm.

Var. A.—Some specimens have two spots on the hinder part of the prothorax.

Hab.—Europe; Connecticut; Amherst, Mass.

It is very difficult to separate this species from *V. germanica* Sauss. as both are very variable and run into each other to such an extent as to be quite perplexing.

V. germanica Fab. ♀.—Eyes extending nearly to the base of the mandibles. Head black, with the mandibles, except the teeth, the clypeus, except the lower margin, and a variable mark in the center, a subquadrate mark on the front generally connected with the yellow in the sinus of the eyes and a band behind the eyes yellow; antennæ all black. Thorax black, with the posterior border of the prothorax, borders of the tegulæ, a triangular spot under the wings and two spots on each scutellum yellow. Abdomen marked as in *V. vulgaris*. Legs yellow, with the coxæ, except a yellow spot in front, the trochanters and base of femora black. Wings ferruginous, with the nervures brown; of the same size as *V. vulgaris*.

♂.—Similar to the worker.

Worker.—Similar to the female, except that the apical yellow borders are much narrower and tridentate.

Hab.—Europe; North America; Ottawa (Couper).

V. occidentalis Cress. ♀.—Eyes extending nearly to the base of the mandibles. Head black, with the mandibles, except the teeth, the clypeus, except a variable spot in the center, a frontal spot, sinus of the eyes, a broad stripe behind the eyes connected above the sinus yellow; antennæ black, with the scape yellow in front. Thorax black, with a narrow yellow line on the posterior border of the prothorax widening toward the wings, the tegulæ, except a brown spot in the center, a triangular spot under the wings, two spots on the scutellum and two on the postscutellum, and sometimes on the metathorax, and generally two small spots on the mesothorax posteriorly yellow. Abdomen black, the first segment

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with a broad yellow border which has a median triangular indentation, the point of which nearly interrupts the posterior border and with a black notch on each side anteriorly; second, third, fourth and fifth segments with a broad, apical, yellow border having a black spot on each side and a median triangular indentation; anal segment with a large yellow spot on each side. Legs yellow, with the coxæ, except a yellow spot on the front, the trochanters and basal half of femora, black. Wings slightly ferruginous, with the nervures brown. Length 18 mm.

♂.—Similar to the worker. Length 12 mm.

Worker.—Differs from the female in being smaller and in having the second, third, fourth and fifth abdominal segments not so broadly bordered with yellow, and the lateral black spots become indentations. Length 12 mm.

Hab.—Colorado, Nevada (Yarrow), New Mexico (Henshaw).

V. infernalis Sauss. ♀.—Larger than the worker, from which it differs by the following characters: A single linear spot behind the upper part of each eye; the first abdominal segment with two spots on the anterior border and a narrow band on the posterior border yellow; the remaining segments as in the worker.

Var. A.—All the abdominal segments have a narrow apical border and two yellow spots.

Var. B.—One specimen has two spots on the postscutellum.

Worker.—Eyes extending nearly to the base of the mandibles. Head black, with the mandibles, except the tips, the clypeus, except a variable mark in the center, a subquadrate mark on the front, a mark in the sinus of the eyes prolonged to the clypeus, and a stripe behind the eyes yellow: antennæ black, with the scape yellow in front. Thorax black, with the posterior border of the prothorax, a large triangular spot under the wings, two spots on the scutellum and two on the postscutellum very small, sometimes wanting, yellow. Abdomen black, the first segment with a broad, yellow border, which has a black dot on each side and an elongated triangular mark interrupting the anterior border medially; the second segment bears a broad, apical, yellow band with a deep, median, black notch, from which two lateral teeth arise; the remaining segments are broadly bordered apically with yellow, indented medially and bear two lateral spots; anal segment with a large yellow spot on each side. Legs yellow, with the coxæ, trochanters and basal half of the femora black. Wings hyaline, with the nervures brown. Length 14 mm.

Hab.—North America.

V. vidua Sauss. ♀.—Eyes extending nearly to the base of the mandibles. Head black, with the mandibles, except the teeth, the clypeus, except the edges, and three black spots in the center, a subquadrate spot on the front, a mark in the sinus of the eyes prolonged to the clypeus, and an interrupted stripe behind the eyes yellow; antennæ black, with the scape yellow in front. Thorax black, with the posterior border of the prothorax, border of the tegulæ, a triangular spot under each fore wing, and two spots on the scutellum yellow. Abdomen black, the first segment with two linear spots on the anterior and a narrow, straight line on the posterior border; the second segment with a narrow apical border, slightly broadened laterally; third segment with a wider, apical, yellow border, which has a broad, central, black notch, from which two lateral black teeth arise, on the fourth and fifth segments these teeth become black spots in

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the yellow; anal segment with a large yellow spot on each side. Legs ferruginous yellow, with the coxæ, trochanters and basal half of the femora, black. Wings hyaline, with the nervures brown. Length 21 mm.

♂.—Similar to the female: the third abdominal segment broadly and irregularly notched in the middle; the fourth, fifth and sixth segments each bearing two lateral black spots; the rest as in the female.

Worker.—Similar to the female, though smaller in size. Length 18 mm.

Hab.—United States; Carolina; Amherst, Mass.

V. sulphurea Sauss. ♀.—Eyes extending nearly to the base of the mandibles. Head almost entirely sulphur-yellow, the usual subquadrate frontal spot of yellow rests on the black front and sends a prolongation up to the median ocellus; antennæ black, with the scape yellow in front. Thorax black, with the prothorax very broadly bordered with yellow; an oblique line below the tegulæ followed by two spots placed in an oblique line below the hind wing, two longitudinal stripes on the mesothorax, two spots narrowed inwardly on the scutellum, a stripe on the front edge of the postscutellum nearly divided medially, two large spots on the back part of the metathorax yellow. Abdomen black, with the same yellow marks as in *V. rufa*, but so developed as to leave almost no black space: this color forms in the yellow the following designs: Two points on the anterior face of the first segment and an irregular transverse mark on its superior face, a trilobed spot on the middle of the second, two lateral spots on each of the following segments and a longitudinal line on the anal segment; the base of the second segment is also black. Legs all yellow, except the hinder part of the hind and middle coxæ, and basal half of the femora. Wings a little smoky, washed with ferruginous; posterior border of the second submarginal cell twice as long as that of the third. Length 16 mm.

Hab.—California, Texas, Nevada.

The markings of this species resemble very much those of *V. carolina*, but this is of very much lighter color, being sulphur-yellow, not reddish yellow. The venation of the wings is very different, for *V. carolina* has the posterior border of the second submarginal cell equal to that of the third.

V. cnueata Fab. ♀.—Eyes extending nearly to the base of the mandibles. Head black, with the mandibles, except the teeth, the clypeus, except a vertical stripe, a subquadrate spot on the front, a large mark in the sinus of the eyes prolonged to the clypeus, and a band above and behind the eyes yellow; antennæ black, with the scape yellow in front. Thorax black, with the posterior border of the prothorax, the tegulæ, two longitudinal lines on the mesothorax, two spots on the scutellum, a transverse stripe on the postscutellum, two spots on the metathorax, a band on the mesopleura and generally two small spots on the metapleura yellow. Abdomen black, the first segment with an orange-yellow line on the anterior and posterior borders connected at the sides; the second segment bearing two lines, one in the center interrupted medially and joined at the sides to one on the posterior border slightly tridentate; the remaining segments with a narrow, apical, yellow border, slightly tridentate. Legs yellow, except a small black mark on the femora of the anterior pair and the posterior side of the

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femora and coxæ of the remaining pairs. Wings clear transparent, with the nervures brown; posterior margin of the second submarginal cell equal to that of the third.

♂.—Similar to the female, except that the marks of the abdomen are yellow instead of orange.

Hab.—United States, Texas, Mexico.

V. carolina Dr. ♀.—Eyes extending to the base of the mandibles. Head black, with the mandibles, the clypeus, a subtriangular mark on the front, the sinus and all the space above and behind the eyes yellow; antennæ black, with the scape yellow in front. Thorax brown, with the posterior border of the prothorax, a short narrow line extending down the anterior border, two longitudinal stripes on the mesothorax, the border of the tegulæ, the scutellum, except a narrow median line, a transverse line on the postscutellum, two very large, irregular spots on the metathorax, a broad band on the mesopleura and two spots on the metapleura yellow. Abdomen ferruginous yellow with a narrow brown line on the base of the second and following segments, each bearing a brown spot on each side. Legs entirely ferruginous yellow. Wings smoky, with the nervures brown.

Worker.—Similar to the female, though smaller. Length 16 mm.

Hab.—United States, Pennsylvania.

V. macfarlandi (*V. bistriata* MacF., Trans. Am. Ent. Soc. vol. xv, 1888).

♀.—Head black, with the mandibles, except a narrow margin, the clypeus, except a small, irregular, black mark, a somewhat triangular spot on the front, a spot in the sinus of the eyes confluent with a narrow orbital margin yellow; antennæ black, with the scape yellow in front. Thorax: collar yellow, giving off an anterior, pointed, descending process; sides of the thorax beneath the wings marked by an oblique yellow stripe and two yellow spots; tegulæ yellow, with a ferruginous spot; scutum with two longitudinal yellow lines: scutellum with two large yellow spots; postscutellum yellow, narrowly interrupted with black, each side bearing a superior, small, circular, yellow spot, and an inferior, large, subquadrate yellow spot. Abdomen: first segment black, with a narrow, interrupted, basal, yellow border, confluent with two lateral, basal spots and at the sides with a narrow, nearly interrupted apical yellow margin; second segment black, marked about the middle with a broad, broken yellow band, with two rounded indentations and confluent laterally with the interrupted band; the third segment yellow, notched basally with black and having two lateral black spots; the fourth segment yellow, less deeply notched with black and having two black spots; the fifth segment yellow, scarcely indented with black anteriorly and having two lateral spots; anal segment yellow, with a longitudinal black stripe. Legs yellow, the coxæ and femora marked above with black, tarsi ferruginous. Wings hyaline, with the nervures brown. Length 18 mm.

Hab.—North America.

I am obliged to change the name of this species as Fabricius previously described a species by this name from South America in Syst. Piez. p. 281, n. 56, 1804.

V. squamosa Dr. (Descr. of *V. squamosa* in Drury Ins. i, p. 98, pl. 43, fig. 7). Head yellow, region of the ocelli black and hairy; eyes black; eyes dark brown.

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except the first joint, a part of which is yellow, shorter than the thorax; the thorax is yellow and a little hairy, having three black stripes on the top and two on each side that meet on the breast; the wings are thin, almost transparent and doubled or folded lengthwise together; the abdomen is of a dark orange color with a black ring near the anal segment and two lesser ones near the thorax, none of which are seen underneath, being there entirely of a dark orange color; the legs are yellow and furnished, except the fore ones, with two spines at the shin joint, these having only one.

Hab.—New York.

V. serripes Fab. (Descr. of Fab., Ent. Syst. vol. ii, p. 226, No. 46, 1793).—Of medium size. Head black, with three spots under the antennæ and two points near the eyes fulvous; antennæ black, the second and third joints rufous. Thorax black, with two points before and two behind the scutellum yellow. Abdomen black, with six yellow fasciæ, the first nearly interrupted. Feet yellow, all the tibiæ serrate spinose. Wings fuscous.

Hab.—North America. In the collection of Rev. Mr. Banks.

V. tibialis Oliv. (Descr. Oliv., Encycl. Meth. Hist. Nat. Ins. p. 690, No. 103).—Head black, with a little point on the front and two others scarcely apparent on the superior mandibles; antennæ black, with the underside of the first joint yellow; the corselet is black, with an interrupted transverse line on the anterior border and another shorter one on the scutellum yellow. Abdomen black, with the border of the first and second segments yellow. Legs yellow, with the femora black. Wings black.

Hab.—North America, Georgia.

Generic Characters of the Genus Polistes.

This genus is characterized by having the metathorax as long as broad, oblique above, with a median dorsal furrow, which is often more or less finely striated. Abdomen subsessile or subpetiolate, long, fusiform and with the basal nervure of the fore wings joining the subcostal at the base of the stigma. The species of this genus are very numerous and widely distributed. They are exceedingly variable in the form and color of their markings, and for this reason it is a very difficult genus to study. M. de Saussure has given most excellent hints on the study of these insects in the "Annales de la Societe Entomologique de France," (3) v, 1857, p. 314, with which every student of the genus should make himself familiar.

In their general habits the species of *Polistes* closely resemble those of *Vespa*, but they differ from them simply in having their nests composed of a single layer of cells, and in not having them enveloped or surrounded by any papery covering. They build their nests mostly about houses and outbuildings.

I have not attempted to give any table for the determination of

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the species, for the reason that they are so exceedingly variable and the amount of material which I had for study was so insufficient that I found it impossible. I have, therefore, done little more than to bring together the descriptions of our species, but trust that others may be encouraged to undertake the serious study of these insects. It is very desirable to secure specimens of the sexes taken from one nest and compare them critically with those of another, and with specimens of the same nest taken at different seasons of the year.

Description of Species.

Polistes canadensis (Linn.).—Head and thorax ferruginous brown; antennæ ferruginous at their base, black in the middle, orange at the end; a little black on the sides of the thorax and in the median dorsal furrow of the metathorax; metathorax with fine, transverse striæ. Abdomen brown or blackish; coxæ and femora black, tarsi, ends of the femora and base of the tibiæ, ferruginous. Wings deep brown, with brown reflections. Length 18 mm.

Var. A.—The femora ferruginous, black underneath; tibiæ of the middle legs ferruginous.

Var. B.—Body and legs entirely ferruginous.

Var. C.—Posterior border of the first segment of the abdomen ferruginous.

Hab.—Florida, Mississippi (Ashmead), Washington, D. C. (Packard), Texas.

P. annularis (Linn.).—Black. Head ferruginous, a line on the top of the clypeus and vertex black; antennæ ferruginous, black in the middle, orange at the end; the prothorax bordered with red; tegulæ, a point under the wings, two marks on the middle of the mesothorax, two points on the scutellum, and two on the metathorax, reddish; postscutellum ferruginous yellow. Abdomen black, the first segment bordered with yellow. Legs brown, with the articulations yellow. Wings black. Length 18 mm.

Var. A.—Thorax ferruginous, varied with black.

Var. B.—Whole insect clear ferruginous.

Var. C.—Insect brown, often confounded by the color with *P. canadensis*.

Var. D.—Thorax and two marks on the sides of the second segment reddish.

Hab.—North America. Very common in the cotton belt of the South (Ashmead), Brazil (Saussure).

P. crinitus (Felton) ♀.—Head yellow, front and vertex ferruginous; clypeus convex, rounded at the base; first joint of antennæ ferruginous the rest yellow, black above in the middle. Thorax black; prothorax angular, bordered with yellow; scutellum and postscutellum yellow, separated by a black line; tegulæ and a line or mark under the wings rejoining the angles of the prothorax yellow; metathorax smooth, with the median dorsal furrow very pronounced; articular valves yellow. Abdomen black, all the segments regularly and broadly bordered with yellow, the borders of the second and third very straight and preceded by a red band; the last two ferruginous yellow. Legs black, ends of the femora, tibiæ and tarsi yellow, outer side of the hind legs black. Wings ferruginous, washed with brown.

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Var. A.—Body brown or red, instead of black; borders of the abdomen somewhat fused with the brown or black; antennæ ferruginous with black in the middle.

Var. B.—*P. crinitus billardieri* Sauss.—Posterior parts of the head yellow; orbits and ends of the clypeus yellow. Thorax red; prothorax bordered with yellow in front and behind; scutellum bordered with yellow; metathorax black, with two yellow lines; the first segment of the abdomen yellow on three sides, black in the middle, the rest reddish, narrowly bordered with yellow. Wings brownish.

Var. C.—Mesothorax black, with two small yellow lines; metathorax with two yellow lines.

Var. D.—Two yellow lines on the posterior plate of the metathorax and two on the sides.

Hab.—America.

P. crinitus lineatus Fab. *Worker.*—Head ferruginous yellow, the region of the ocelli and an irregular line under the antennæ, blackish ferruginous; antennæ ferruginous yellow, the first two joints blackish ferruginous as well as the upper part of several of the middle ones. Thorax ferruginous brown; two longitudinal lines on the mesothorax, the borders of the tegulæ and prothorax, a mark under the wings, a line on the scutellum, one on the postscutellum, and a scalloped mark bilobed at the top on each side of the metathorax, all ferruginous yellow. Abdomen ferruginous brown, with the terminal borders of the segments ferruginous yellow; this border extends forward on the side of the segments. Legs yellow, except the tips of the femora and the outer ends of the middle and hind tibiæ, which are black. Wings ferruginous brown, with violet reflections. Length 16 mm.

Hab.—America.

P. aurifer Sauss. ♀.—Black; mandibles, clypeus, orbits and a very open V-shaped mark on the front yellow; antennæ orange; the borders of the prothorax, a mark under the wings, the tegulæ the anterior border of the scutellum and postscutellum and two lines on the metathorax yellow. Abdomen yellow, base of the first two segments black, the black excavating the yellow in the middle and sometimes forming there a design, the third occasionally black in the middle at its base. Legs black, ends of femora, tibiæ and tarsi bright yellow. Wings having a general golden tint or a ferruginous gray. Length 15 mm.

Var. A.—End of the posterior tibiæ black.

Hab.—California, Colorado, Australia, Honolulu.

P. fuscatus (Fab.).—"Fuscous, spotted with ferruginous; first segment of the abdomen with a yellow margin, second with two ferruginous spots. Length and magnitude of *P. annularis;* antennæ black, base ferruginous. Head fuscous, with the labium and mandibles ferruginous. Thorax fuscous, with a ferruginous line on each side in front. Abdomen fuscous, the first segment with a yellow margin, second with a large fulvous spot on each side. Feet variegated."

Hab.—America.

P. fuscatus instabilis Sauss. *Worker.*—Insect dark red, a little rose colored; base of the clypeus yellow; vertex around the ocelli black; antennæ black in the middle; prothorax bordered, its angles without spines; underside

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of thorax and the sides of the metathorax and mesothorax entirely black; metathorax smooth, or almost smooth; orbits often yellowish; the borders of the prothorax, a large mark under the wings, anterior angles of the scutellum, postscutellum or only its anterior border, as well as two lunate spots on the metathorax, sulphur-yellow; on each edge of the metathorax on the sides, a yellow mark often connected with the mark on the posterior plate; tegulæ often yellowish; base of the first two segments of the abdomen often black; terminal borders of the first, second and third segments yellow. Legs black, ends of the femora, tibiæ and tarsi yellow or red, posterior tibiæ black, except the base, which is yellow. Wings of a uniform gray tint. Length 14 mm.

Var. A.--Mesothorax black, with two red marks; metathorax entirely red.

Var. B.--Thorax entirely black; first segment of the abdomen reddish black, bordered with yellow, the second red, its base black, its border glaucous yellow, yellow on the edges, a little black on the front of the border, the others black; the third and fourth bordered with greenish yellow, on each edge an irregular red marginal mark; terminal segment reddish. Legs varied with red and yellow.

Hab.—United States, Mexico.

P. fuscatus exilis Sauss. ♂.—Head and thorax black; face whitish yellow; posterior orbits and the space between the eyes of the same color; mandibles sulphur-yellow, with a black dot at their base; antennæ black, ferruginous beneath, except at the end; the two edges of the prothorax bordered with sulphur-yellow or ferruginous; anterior border of the postscutellum and two lines on the metathorax sulphur-yellow, as well as the articular valves. Abdomen black, all the segments bordered with sulphur-yellow, the second bearing on each side a round point of red, and the first often two yellow points in front of the angles of the border of this segment; end of the abdomen often ferruginous. Legs ferruginous, under or posterior side of the femora black; posterior legs a little brown; front of the coxæ yellow, which color prolongs itself onto the front of the thoracic segments placed above the coxæ. Wings transparent, washed with yellow. Length 13 mm.

Var. A.—Prothorax and metathorax black; the first segment of the abdomen bordered with yellow.

Hab.—North America.

P. pallipes Lepel. ♀.—Head black, with the mandibles, the convex clypeus, except the edge, a broad stripe behind the eyes, the sinus of the eyes with a line extending to the clypeus, ferruginous; antennæ black above, ferruginous beneath. Thorax black; posterior edge of the prothorax and the tegulæ ferruginous. Abdomen black, the first segment with a pale yellow terminal border; all the coxæ, the greater part of the femora and the outer side of the tibiæ black, the rest of the legs ferruginous or dull yellow. Wings smoky brown; some specimens have a small spot under the base of the fore wings, two points sometimes extended into a line on the front of the scutellum, a similar line on the postscutellum, and sometimes a longitudinal stripe on each side of the median dorsal furrow of the metathorax yellow; occasionally specimens are found in which all the abdominal segments above and beneath have a narrow terminal border; the clypeus is sometimes black and the markings yellow instead of ferruginous; a few specimens have a ferruginous spot on each side of the second abdominal segment and occasionally traces may be found on some of the other segments. Length 21 mm.

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♂.—Differs from the female in having the clypeus very flat, all the face, the breast and the coxæ beneath, yellow; the front of the femora reddish yellow; the underside of the antennæ yellow, or reddish yellow. Length 20 mm.

Worker.—Similar to the female, but somewhat smaller. Length 18 mm.

M. de Saussure has given the following descriptions of varieties:

Var. Worker.—Two yellow lines on the metathorax.

Var. A.—Border of the tegulæ indistinct, first segment of the antennæ red; postscutellum ornamented with two yellow points.

Var. B.—Abdomen black, border of the second segment unmarked, the lateral spots red.

Var. C.—Prothorax, clypeus and border of the third segment of the abdomen red.

Var. D.—A mark under the wings, two points on the scutellum yellow; metathorax with two yellow lines.

Var. E.—Marks of the abdomen large, melting with the borders which are red.

Var. F.—All the segments of the abdomen bearing a red mark on each edge.

Var. G.—All the segments red, their base black, their borders more or less embroidered with whitish yellow.

Var. H.—Mesothorax and abdomen red; no yellow on the insect; base of the second segment black.

Var. I.—Metathorax red, with two yellow lines; scutellum marked with yellow. Abdomen red.

Var. J.—Abdomen chestnut, the first segment embroidered with yellow; two yellow points on the metathorax.

Var. K.—Marks on the second segment of the abdomen white.

Var. L.—Large; abdomen ferruginous, with four quite large yellow borders; metathorax with two yellow bands; antennæ a little gray above.

Hab.—United States, Canada.

P. metrica Say.—Ferruginous. Abdomen black. Wings dark violaceous; body ferruginous; antennæ fuscous, first and second joints ferruginous beneath, last five or six joints fulvous beneath; hypostoma with a few distant, short, yellow hairs, not sericeous, at the middle of the tip a little prominent. Thorax with a black dorsal line abbreviated behind, each side of which is an obsolete line confluent behind, exterior to which at the base is a black line attenuated before and abbreviated. Wings dark violaceous. Feet black, tibiæ within, except posterior pair, knees and tarsi yellowish. Abdomen black, first segment absolutely piceous each side and on the posterior edge, second segment also with obscure ferruginous on each side, sometimes obsolete. Length over four-fifths of an inch.

Hab.—United States.

P. minor Beauv.—*Worker.*—Insect ferruginous; clypeus yellow, with a ferruginous mark; mandibles yellow; orbits broadly bordered with yellow; antennæ black above at the middle, nearly to the end; the borders of the prothorax, tegulæ, and a point under the wings, the anterior border of the scutellum, the postscutellum and two large marks, which cover the posterior plate of the metathorax, yellow. Abdomen short, oval, depressed, the first segment broadly bordered with yellow, this border bearing a large, square, or tricuspid indentation; the three following segments ornamented at the borders with little festoons, the

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rest of the abdomen ferruginous. Legs ferruginous, knees, tibiæ and tarsi, yellow; the posterior tibiæ ferruginous at the end. Wings ferruginous, brown in the radial; third cubital cell regularly lozenge shaped.

♂.—Antennæ scarcely obscure above; borders of the orbits and the yellow of the clypeus forming a yellow V on the front of the face.

Hab.—Georgia, Louisiana, California, Texas.

P. rubiginosus Lepel.—Insect entirely clear reddish yellow: a little black around the ocelli; antennæ blackish above from the fourth segment up. Thorax bearing a golden down. Wings brown, with violet and golden reflections.

Var. A.—Three black lines on the mesothorax, one on the metathorax. Length 18 mm.

Hab.—Pennsylvania, Illinois, Georgia, Missouri (Murtfeldt), Texas.

P. perplexus Cress. ♂.—Ferruginous, strongly golden sericeous; face and clypeus flat, dull yellow-white, pale on orbits and above insertion of antennæ; mandibles and cheeks beneath more or less dull yellowish white; antennæ ferruginous, paler at base beneath, joints above more or less black, especially those at the apex; collar more or less black; prothorax generally more or less margined with pale yellow; mesothorax black, with two central, longitudinal, more or less distinct ferruginous lines; scutellum sometimes divided centrally by a black line; metathorax with a broad, deep, longitudinal groove, finely and transversely striated, ferruginous, generally with three longitudinal black lines, which are sometimes subobsolete; sometimes the metathorax is entirely ferruginous, except the groove, which is always black, sometimes entirely black, except a spot on the flanks and a stripe on each side of the groove; pleura generally yellowish beneath, more or less black laterally. Abdomen of different shades of ferruginous, strongly golden sericeous, the three basal segments have frequently a more or less distinct, narrow yellow apical margin; the base of the second, third and fourth segments is more or less broadly black, sometimes obsoletely so, sometimes only the second or third, or fourth is so marked; ventral segments more or less marked with black at the base, the intermediate segments sometimes banded with yellow. Legs ferruginous, the four anterior coxæ, femora and tibiæ beneath more or less pale yellowish, all the coxæ more or less black above. Wings fuscous, darker along the costa and in the marginal cell; second and third submarginal with subhyaline streaks. Length 18-21 mm.

Hab.—Texas, Bermuda.

P. generosus Cress. ♂.—Head subsericeous, face long, dull luteous; anterior orbits, a band above the antennæ filling up the emargination of the eyes, and mandibles, yellowish white or luteous; venter and occiput black; cheeks and a dot on each side behind the ocelli, ferruginous; clypeus longer than wide, flat, sparsely and finely punctured, apex angular; ridge between the antennæ subtuberculate above: antennæ long, black above, fulvous beneath, scape yellowish beneath, narrowly edged with fulvous above; prothorax fulvo-ferruginous, black laterally, upper margin narrowly edged with yellowish; mesothorax black, with two short ferruginous stripes on the anterior middle; scutellum black, with two ferruginous spots; postscutellum ferruginous, narrowly margined with black; metathorax transversely and rather coarsely wrinkled above, with a broad, shallow groove down the middle, a slender stripe on each side of the groove and a spot

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on each flank ferruginous; pleura black; a ferruginous spot beneath the tegulæ and a luteous subangular mark behind the anterior coxæ; tegulæ ferruginous, fuscous at the base. Legs fulvous, yellowish beneath, sericeous; the four anterior coxæ above, posterior pair entirely, and all the femora above, black. Abdomen subsericeous, fulvo-ferruginous, a longitudinal mark on the basal middle of the first segment; basal margin of second segment dilated above and suddenly dilated laterally; the narrow basal margin of the third and fourth segments black; apex of the second and following segments stained more or less with fuscous; apical segment blackish, rugulose; venter black. Length 22 mm.

Hab.—Texas.

P. texanus Cress. ♀.—Dull ferruginous, sericeous. Head yellow; vertex, occiput and posterior margin of the cheeks ferruginous; clypeus subconvex, sparsely punctured, sometimes tinged with fulvous at the base; antennæ entirely fulvo-ferruginous; narrow margins of the prothorax, sometimes a band at the base of the scutellum, postscutellum more or less, two stripes on the disc of the metathorax, a spot or stripe on each side, a spot beneath the tegulæ, a spot beneath the posterior wing and the tegulæ more or less yellow; metathorax with a shallow median groove, transversely striated; sometimes the mesothorax has two short discal lines. Abdomen strongly pale golden sericeous, rather broad apical margin of all the segments, except the last, even on the first segment and more or less strongly sinuate anteriorly on the remaining segments, an angular mark on each side of the first segment sometimes reduced to a dot, and a spot on each side of the remaining segments, larger on second and sometimes nearly confluent with the apical band, all yellow; all the apical bands slightly interrupted or indented medially by a slender ferruginous line; venter ferruginous, more or less varied with yellowish; sometimes the yellowish markings on the second and following segments are more or less obscure; anterior coxæ beneath, a line on the outside of the four posterior coxæ, four anterior femora beneath except base, tips of all the femora and outside of all the tibiæ and base of tarsi more or less yellowish, tips of tarsi fuscous. Wings yellowish fuscous, darker along the costa. Length 21 mm.

♂.—Closely resembles the female; the face flat as usual, whitish yellow, this color extending above the antennæ and on a line with the emargination of the eyes; clypeus flat; prothorax sometimes broadly yellowish laterally; mesothorax occasionally with two short discal yellow lines; the markings of the abdomen vary considerably, being sometimes very distinct with the apical bands broad and lemon-yellow and the lateral spots round and whitish; sometimes the apical bands are narrow and the lateral spots wanting, except on the second segment; sometimes the first segment has no lateral spot.

Hab.—Texas.

P. bellicosus Cress. ♂ ♀.—Uniformly dull ferruginous, subsericeous.

♀.—Clypeus, sides of face, a transverse line above the antennæ, posterior orbits broader beneath and the mandibles yellow; clypeus subconvex and sparsely punctured; tegulæ, a line on the outer side of all the coxæ, knees and four anterior tibiæ and tarsi beneath, the narrow apical margin of the abdominal segments more or less sinuate anteriorly, and sometimes a spot on each side of the first and second segments, all lemon-yellow; mesothorax generally with a fine central longitudinal black line; metathorax finely and transversely wrinkled. Wings fuscous, or fusco-hyaline, yellowish along costa, subviolaceous.

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♂.—Clypeus, face as far up and on a line with the emargination of the eyes, narrow posterior orbits broader beneath, and mandibles yellow; clypeus flat; antennæ long, pale beneath, dark above, scape yellowish beneath; margins of prothorax, basal margin of scutellum, postscutellum, two longitudinal lines on disc of metathorax, sometimes a lateral spot beneath tegulæ, space between four anterior coxæ, coxæ beneath all lemon-yellow. Length 18 mm.

Hab.—Georgia, Florida, Mississippi, Texas.

P. variatus Cress. ♀.—Strongly sericeous, black; a transverse, subangular line above antennæ; posterior orbits broader beneath, and mandibles, except tips, yellow; clypeus subconvex, sparsely punctured, ferruginous, more or less broadly yellow at apex; cheeks sometimes ferruginous; antennæ ferruginous, black above; prothorax ferruginous, black on extreme lateral corner and narrowly margined anteriorly and posteriorly with yellow; mesothorax and pleura, except yellow spot beneath tegulæ, entirely black; scutellum and postscutellum ferruginous, margined at base with yellow; metathorax black, with four longitudinal yellow stripes, the lateral one sometimes slightly undulate, disc longitudinally sulcate and finely transversely wrinkled; tegulæ fulvous, margined with yellow. Abdomen strongly sericeous, fuscous or black, varied with dull ferruginous, especially on the second segment; apical margin of each segment dilated laterally and slightly interrupted medially, and an irregular spot on each side, largest on the second segment yellow; beneath ornamented much as above. Length 18 mm.

♂.—Face and clypeus flat, and yellow as far up and on a line with emargination with the eyes, cheeks beneath broadly yellow; antennæ long, yellowish beneath, apex black. Thorax without any ferruginous colors; sides of prothorax and pleura anteriorly beneath pale yellow; scutellum sometimes with only a lateral yellow dot at base; lateral stripes of metathorax sometimes wanting. Abdomen darker than in the female, sides of the second segment with a large ferruginous blotch enclosing a yellow spot; lateral margin of the first segment yellow; disc of the second, third and fourth ventral segments with a large triangular yellow mark, apical margins also yellow. Length 18 mm.

Hab.—Texas.

P. navajoe Cress. ♀.—Head pale yellow, the venter, occiput and tips of mandibles black; a yellow spot on each side confluent with the orbits; clypeus rounded and ciliated anteriorly, sparsely punctured and pubescent; cheeks tinged with fulvous; antennæ fulvo-ferruginous, the middle of flagellum black. Thorax velvety black; posterior border of the prothorax broader in front, tegulæ and scutellum ferruginous; the mesothorax has sometimes a faint stain on each side; metathorax pubescent, obliquely striated, with a deep, central, longitudinal channel. Abdomen longer than the head and thorax, sericeous, the first and second segments above and beneath, except apical margins, broader on the second segment, and the basal margin of the third segment above and beneath black; the remainder lemon-yellow; the anterior half of the apical margin of the second segment is fulvous above, shading gradually into the yellow, sometimes this margin is entirely fulvous; the third and remaining segments have a faint, central, longitudinal, fulvous streak and a lateral spot of the same color, that on the third segment sometimes very distinct. Length 18 20 mm.

Hab.—California, New Mexico, Arizona.

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P. flavus Cress. ♀.—Lemon-yellow; base of clypeus, vertex and cheeks tinged more or less with fulvous; clypeus subdepressed, subquadrate, sparsely punctured, each puncture giving out a short fulvous hair, apex angular, ciliated, the lateral angles with two teeth, the inner one the longest: tips of mandibles black; space between the antennæ protuberant; antennæ entirely fulvous, darker above; prothorax faintly tinged with fulvous, its posterior margin yellow; mesothorax fulvous, the incisures and a longitudinal black line on the disc abbreviated posteriorly, black; a faint line on each side of the disc and the lateral margins yellow; metathorax with a deep, central, longitudinal channel; tegulæ with a median fulvous spot. Abdomen bright lemon-yellow, not longer than head and thorax, subsericeous, a central longitudinal streak posteriorly, a spot at the base of the first segment, a narrow line across the middle, slight stains on each side of the first and second segments at base, a transverse spot on each side near the apex of the second to fifth segments connected by a slender arcuated line (both above and beneath) fulvous; basal segment triangular, its apical breadth equal to its length. Legs faintly tinged with fulvous at base and on the tarsi. Wings varied with fuliginous, darker along the costa, a bright violaceous reflection, base of both wings, a narrow longitudinal streak through the middle of the wing, and most of the second submarginal cell subhyaline; stigma, costal vein from the stigma to the base and the nervures at the base of the wing fulvous, the rest black. Length 18 mm.

Hab.—New Mexico.

P. anaheimensis Prov. ♀.—Black with yellow spots; clypeus, mandibles, front, orbits, an angular band above the antennæ and cheeks yellow; antennæ beautifully honey-yellow without any spot. Thorax black; anterior and posterior border of the prothorax, tegulæ, spot on the sides, a line under the hind wings, the borders of the scutellum and postscutellum, and two longitudinal lines on the metathorax yellow. Abdomen sulphur-yellow: all the segments with a black band at the base; the band on the second and third segments is prolonged into a triangular point in the middle; the basal segment is black with the top yellow, and a lateral yellow spot contiguous to the apical band. Feet yellow, coxæ and two-thirds of the femora, with a spot on the inside at the end of the hind legs black. Wings smoky yellow, nervures brown.

♂.—Abdomen almost entirely yellow, having only a narrow black line at the base of the segments. Length 17-18 mm.

Hab.—Anaheimen, California.

P. nestor (Fab.).—Fuscous; front yellow. Head fuscous, front and mouth widely yellow; antennæ black, ferruginous beneath. Thorax fuscous, with the anterior margin, two very fine, oblique lines on the front, and two abbreviated lines under the scutellum yellow; scutellum ferruginous. Abdomen ferruginous, a black spot at the base of each segment and the margins yellow. Feet ferruginous. Wings ferruginous; a little larger than *V. marginalis*.

Hab.—North America.

P. apachus Sauss.—"Ferruginous, much marked with yellow. Abdomen subdepressed, ovoid; segments bimaculate with sulphur-yellow; mesothorax marked with two sulphur-yellow lines. Wings ferruginous."

Hab.—New Mexico and Sonora (Sauss.).

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P. carolinus (Linn.).

Saussure, who examined the type of Linnaeus, in London, states that the species which was originally put into the genus *Vespa* is a true *Polistes*, and is as long as *V. crabro*. His description is as follows:

Front yellow. Thorax ferruginous, with three black longitudinal lines. Abdomen sessile, ferruginous: fore wings blackish, hind wings hyaline.

Saussure further states that the species resembles *P. bicolor*, of South America, more or less, but with two yellow lines on the thorax and with the antennæ brown.

Hab.—Carolina.

P. comanchus Sauss.—Moderately stout; margin of the clypeus rounded, not acute, dentate. Head ferruginous, vertex and middle of antennæ black. Thorax black, bordered in front with ferruginous. Abdomen golden-yellow, the segments margined with yellow, base of the first black.

Hab.—New Mexico.

General Characters of the Genus Polybia.

The species of this genus have the wings folded longitudinally when at rest, the prothorax prolonged backward to the base of the wings, and two spurs at the end of the middle tibiæ. They closely resemble *Polistes* in the venation of the wings and in the form of the thorax, but differ greatly in the form of the abdomen. The first segment is slim and petiolate, and about as long as the rest of the abdomen, which is compressed and ovate. These insects are quite small, not nearly as robust as any of the species of *Polistes*.

Only two species of *Polybia* have thus far been found in the United States—*P. cubensis*, in Florida, and *P. flavitarsis*, in California. Numerous other species occur in Cuba and Mexico, and it is possible that some of these may be found in our territory.

Their nests are built on leaves of trees or in some sheltered place and consist of but one layer of cells as in *Polistes*, but they have one or more coverings to protect them from the weather.

The species of *Polybia* vary greatly in coloration, much as in *Polistes*. The two species in the United States are easily separated, *flavitarsis* being comparatively large, about 18 mm. long, and marked chiefly with light brown and yellow, occasionally with a little black, while *cubensis* is relatively small, about 10–12 mm. and marked chiefly with dark brown or black, with narrow, yellow borders.

Polybia flavitarsis Sauss. ♀.—Head as broad as long, orange-yellow; eyes and space between the antennæ and ocelli black; antennæ ferruginous,

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brown at the tips, and orange-yellow on the front of the scape; anterior and posterior borders of the prothorax above, tegulæ, two spots under the wings, anterior border of the scutellum and postscutellum, and two marks on the metathorax orange-yellow; base of the first abdominal segment black or brown, apical end orange-yellow; the rest of the abdomen orange-yellow, or sometimes transversely striped with black; although the coloration of the abdomen is very variable, the brown predominates on the second and third segments without forming any definite designs; coxæ, trochanters and base of femora black, the rest of the legs and the spots on the coxæ and trochanters orange-yellow. Length 16-20 mm.

♂.—Very closely resembles the female.

Worker.—Is unknown to me.

Hab.—California.

P. cubensis Sauss. ♀.—Prothorax brown, with the posterior border and a line connected with it and extending down each side of the anterior border yellow; tegulæ yellow; scutellum brown, with the anterior border yellow; postscutellum yellow; mesothorax brown, with two light brown longitudinal marks in the center; metathorax black, with two large yellow spots; meso- and metapleura black, each bearing two yellow spots. Abdomen brown, each segment bearing a narrow, apical, yellow border; coxæ, except two yellow spots, trochanters and base of femora black; rest of the legs yellow. Wings transparent, cloudy at the tip, nervures ferruginous.

Hab.—Florida, West Indies.

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EXPLANATION OF PLATE I.

ALL THE FIGURES MORE OR LESS ENLARGED.

Fig. 1.—Side view of *Vespa maculata*.

a. antenna.
b. eye.
c. clypeus.
d. mandible.
e. space between eye and mandible.
f. space behind eye.
g. prothorax.
h. mesothorax.
i. scutellum.
j. postscutellum.
k. tegula.
l. mesopleura.
m. metapleura.
n. coxa.
o. abdomen.

Fig. 2.—Top view of *Polistes pallipes* ♀.

a. antenna.
b. eye.
g. prothorax.
h. mesothorax.
i. scutellum.
j. postscutellum.
k. tegula.
o. abdomen.
p. metathorax.
q. petiole of abdomen.
r. ocelli.
s. vertex.

Fig. 3.—Abdomen of *Polybia flavitarsis*.

Fig. 4.—Front view of head of *V. consobrina*.

a. antenna.
b. eye.
c. clypeus.
d. mandibles.
r. ocelli.
t. teeth.
u. front.

Fig. 5.—Fore wing of *Polistes pallipes*.

a. stigma.
b. costal nervure.
c. subcostal nervure.
d. first submarginal cell.
e. second submarginal cell.
f. third submarginal cell.

Fig. 6.—Hind wing of *Polistes pallipes*.

Fig. 7.—Fore wing of *V. diabolica*. Letters as in fig. 5.

Fig. 8.—Hind wing of *V. diabolica*.

Fig. 9.—Antenna of *V. diabolica*.

a. scape.
b. flagellum.

Fig. 10.—Antenna of *V. diabolica*. Letters as in fig. 9.

Fig. 11.—Middle leg of *V. diabolica*.

a. coxa.
b. trochanter.
c. femur.
d. tibia.
e. apical spurs.
f. tarsus.

Fig. 12.—Middle leg of *Polistes pallipes*. Letters as in fig. 11.

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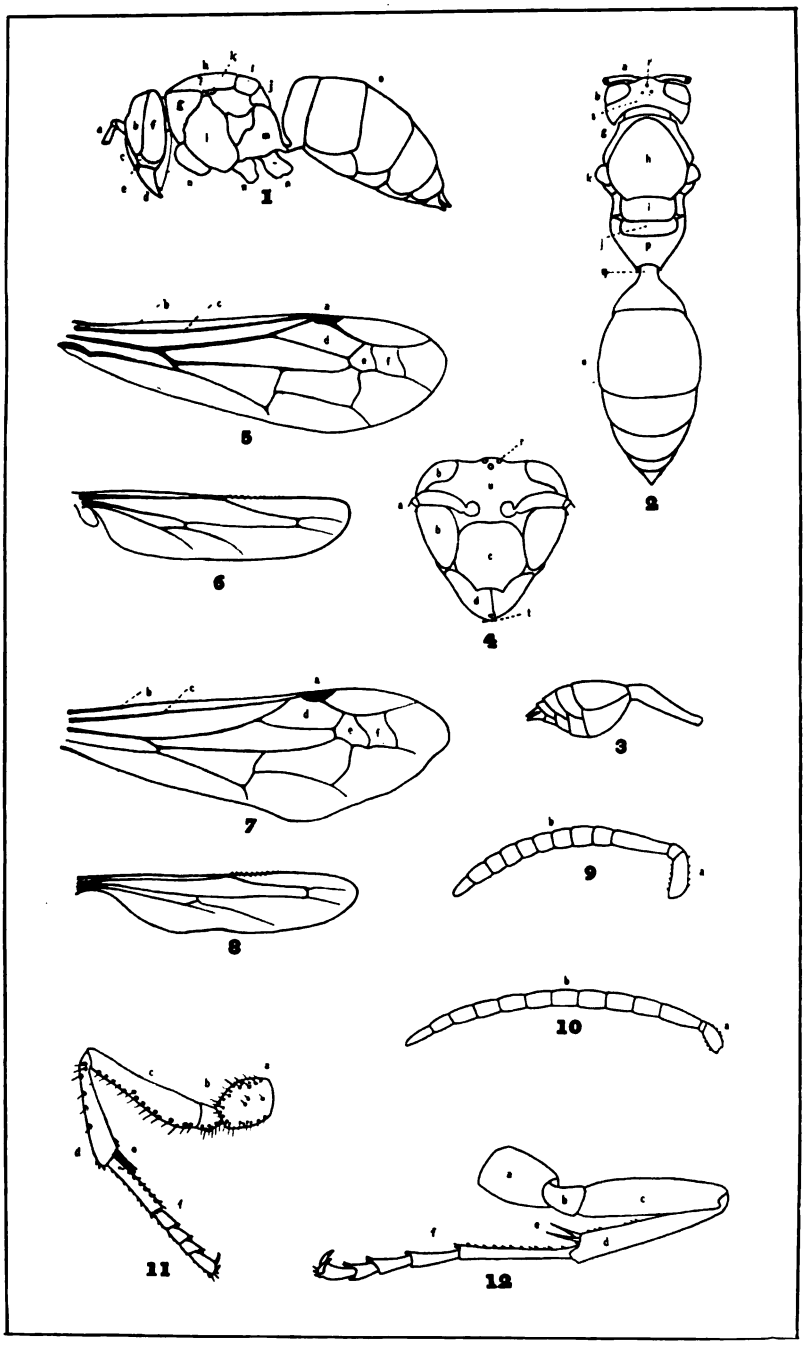

LEWIS.—VESPINÆ.

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VOLUME XXIV, NUMBER 3.

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TRANSACTIONS

OF THE

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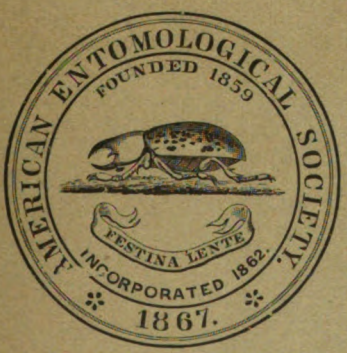

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A REVIEW OF THE ICHNEUMONID SUBFAMILY TRYPHONINÆ.

BY G. C. DAVIS.

The subfamily Tryphoninæ is perhaps the most difficult for systematic classification of any in the family Ichneumonidæ. European specialists agree as to this, and a review of the present arrangement of our own species conclusively justifies the statement in this country. More material has helped to correct many errors, still more is necessary to correct others that are yet doubtful.

It has been my privilege in this study to have before me for comparison nearly all the known American types of Tryphoninæ and a great deal of unclassified material from all parts of the United States and Canada. For these favors I am especially grateful to Mr. E. T. Cresson for the loan of his types, which are mostly in the collection of the American Entomological Society in Philadelphia, and to that society for much unclassified material; to Mr. L. O. Howard, curator of the United States National Museum, for the loan of Cresson and Ashmead types and unclassified material in that collection; to Mr. Wm. H. Ashmead, for the loan of types in his private collection; to Mr. W. H. Harrington, of Ottawa, Canada, for the loan of his own and a few Provancher types in his collection; to Rev. Thomas W. Fyles, of Quebec, and Rev. J. L. Zabriskie, of New York, for loan of types; also to Mrs. Slosson, Dr. Nason, Prof. Aldrich, Prof. Gillette, and a host of others who have contributed material that greatly aided, not only in new types, but in a better classification from a larger series. Much valuable aid has also been rendered me by the European specialists, Dr. O. Schmiedeknecht, of Blankensburg, Germany, and Dr. Jules Tosquinet, of Brussels, Belgium, who have given me many good suggestions and sent me many representative specimens of the newer genera of Foerster and Thomson.

A part of the Provancher species are not classified in this review because of the provincial restrictions against loaning any of their material, and conditions would not permit my second trip to Quebec for this alone.

In the general classification, Foerster's "Synopsis der Familien und Gattungen der Ichneumonen" has been adopted. Conservative

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European specialists in this family usually recommend Thomson's "Opuscula Entomologica" at the present time. There are many desirable features about Thomson's work that recommend it, and for the classification of European material it quite likely is preferable. The great disadvantage to American workers in using this classification is that Thomson has entirely ignored Foerster's genera, which have priority if recognized, and adopted many new names which must later become synonyms, at least in part. Until this synonymy is cleared up the older works seem the safer.

Foerster's synopsis would have had much more worth had he given some characters with the table of genera; quite a few of his genera, too, are based upon characters too unstable and variable to be permanent. Many of these genera must be cut out and discarded, or strengthened by characters overlooked by the author. This seems especially true of the Tryphonina. In the main the synopsis is a grand one, and shows much thought and study in its preparation. The primary division of tribes (families as he classes them) is much in advance of Holmgren's subfamilies, but there is still a chance for improvement. Several changes have been made in the original tables, many of them from suggestions made in Thomson's work; more can be made with farther study.

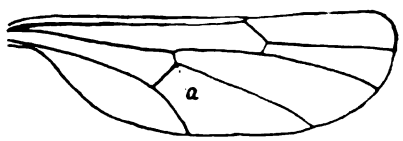

Fig. 1.

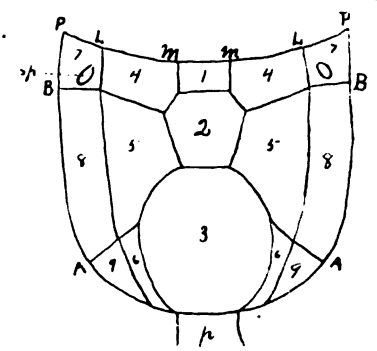

Fig. 2.

1. Basal, or first median area; 2. Superior, or second median area; 3. Apical, petiolar, or third median area; 4 External, or first lateral area; 5. Area dentipara, external median, or second lateral area; 6. Internal, middle apical, or third lateral area; 7. Spiracular, or first pleural area; 8. Lateral, middle pleural, or second pleural area; 9. Angular, or third pleural area; MM. Median longitudinal carinæ; LL. Lateral longitudinal carinæ; PP. Pleural carinæ; BB. Basal, transverse, or ordinary transverse carinæ; AA. Apical transverse carinæ; p. petiole of abdomen; sp. spiracle.

The genera, or groups of genera, that have been found to be too variable for use are marked with an †, and those not represented so far in our own fauna are marked with a *.

Several characters, not heretofore used in our classification of the Ichneumonidæ, have been found to be of great value. One of these is the clypeus,

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whether elevated, separated from the face or not, and the different forms which it assumes, especially at the apex. Another is the humeral cross nervure of the hind wing, whether broken or not, and if so, whether broken above or below the middle (see cut of the same which is broken above the middle at *a*, Fig. 1). A third, and very important character, is the areolets and carinæ forming them. A completely areolated metathorax is represented in the accompanying figure, Fig. 2.

Synopsis of the Tribes of Ichneumonidæ.

1. Abdomen more or less compressed, petiolate, rarely sessile or subsessile; areolet usually triangular or wanting.....2.
   Abdomen not compressed, or if so, as in some cases, it shows various other characteristics.....10.
2. Basal segment of hind tarsi thickened.....ANOMALONINI.
   Basal segment of hind tarsi not thickened.....3.
3. Middle tibiæ with a single spur.....TRACHYDERMATINI.
   Middle tibiæ with two spurs.....4.
4. Median vein of hind wing disappears towards the base; costal vein thickens as it approaches the front margin; the two sections of the radius form a right angle.....PORIZONINI.
   Median vein does not disappear toward the base and the main vein does not thicken as it approaches the front margin; segments of the radius not at right angles.....5.
5. Posterior femora armed with a strong median tooth beneath.
   PRISTOMERINI.
   Posterior femora without tooth beneath.....6.
6. Stigma short and broad, wedge-shaped, scarcely twice as long as wide; wings without areolet; margin between vertex and occiput broken in the middle.
   CREMASTINI.
   Stigma elongate.....7.
7. Third discoidal cell narrowed at base, rarely ever half as wide as the second recurrent nervure; ocelli large.....8.
   Third discoidal cell about half, or more than half as wide as at apex; ocelli small.....9.
8. Antennæ clavate; both frontal depressions very large and entirely separate.
   HELLWIGINI.
   Antennæ not clavate; frontal depressions not large, and not entirely separate.
   OPHIONINI.
9. Humeral cross-nervure of hind wing either straight or broken below the middle.....CAMPOPLEGINI.
   Humeral cross-nervure broken at or above the middle; abdomen subsessile to sessile.....BANCHINI.
10. Abdomen deeply and coarsely punctured, sometimes aciculately so; scutellum large, usually margined; posterior tibiæ with two spurs; form robust.
    METOPINI.
    Abdomen rarely coarsely and deeply punctured, and if so the posterior tibiæ lack the two spurs.....11.

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11. Face strongly protuberant and coarsely punctured; clypeus wanting, or small.....12.
Face not strongly protuberant, or if so the clypeus is distinct.....13.
12. Scape small, or normal size.....EXOCHINI.
Scape large and much elongated.....ORTHOCENTRINI.
13. Upper tooth of mandibles bidentate; abdomen sessile, basal segment nearly quadrate.....BASSINI.
Mandibles bidentate, seldom toothless.....14.
14. Posterior tibiæ without spurs, or at most with a single small one. EXENTERINI.
Posterior tibiæ with two spurs.....15.
15. Abdomen sessile, or subsessile; ovipositor usually long.....16.
Abdomen petiolate, or if sessile, the ovipositor is short.....17.
16. Dorsum of abdominal segments usually uneven because of impressions; segments usually plainly punctured.....PIMPLINI.
Dorsum of abdominal segments without impressions and seldom much punctured.....LISSONOTINI.
17. Hind legs long and much thickened; last ventral segment of the abdomen lanceolate, projecting; antennæ short and straight.....ACÆNITINI.
Hind legs not both long and thick; antennæ not short and straight.....18.
18. Mandibles projecting forward and forming a cavity with the clypeus, which is impressed or excavated; head cubical.....XORINI.
Mandibles closing and not forming a cavity with the clypeus.....19.
19. Head small, face usually glabrous; clypeus large, about as long as broad, arched and impressed at sides; second transverse cubital nervure often wanting; small insects.....PLECTISCINI.
Head and clypeus normal.....20.
20. Areolet large, rhomboidal; ♂ with two styloid projections at apex of abdomen.....MESOCHORINI.
Areolet not large and rhomboidal: ♂ without styloid projections.....21.
21. Scutellum terminates in a very long spine.....AGRIOTYPINI.
Scutellum does not terminate in a spine.....22.
22. Wings wanting, or short and imperfectly developed, in the last case without stigma (it may be that the winged ♂ with the unareolated metanotum exists).....PEZOMACHINI.
Wings fully developed, and if not there is a stigma.....23.
23. Ovipositor distinctly projecting; no lunulæ* on the third abdominal segment and seldom on the second; areolet pentangular, closed, or open behind.24.
Ovipositor not or hardly projecting, seldom prominently so, in which case the lunulæ are always present.....26.
24. Areolet open behind.....HEMITELINI.
Areolet closed.....25.
25. Metanotum with a well-formed superior median area; petiole with two carinæ. PHYGADEUONINI.
Metanotum without a well-formed superior area; petiole without carinæ. CRYPTINI.

* By lunula is meant a small shining spot a little beyond the spiracles of the second and third abdominal segments and always a little farther away from the margin.

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26. Metanotum truncate, sloping from the base.....27.
Metanotum not sloping directly from the base.....28.
27. Scutellum strongly elevated, often pyramidal.....TROGINI.
Scutellum of the usual form, flat, or a little arched.....STILPNINI.
28. Lunulæ always present on second and third abdominal segments.....29.
Lunulæ wanting, or at least not present on both segments at the same time.30.
29. Spiracles of metanotum elongate, linear or oval.....ICHNEUMONINI.
Spiracles of metanotum circular.....PHÆOGENONINI.
30. Areolet pentangular, resting above with a broad base.....31.
Areolet quadrangular, triangular or wanting, seldom an irregular pentagon.32.
31. Tarsal claws simple, not pectinate.....ALOMYINI.
Tarsal claws strongly pectinate.....LISTRODROMINI.
32. Tarsal claws pectinate; clypeus usually narrowed and nearly elliptical.
CTENOPELMINI.
Tarsal claws not pectinate, or with only a few strong teeth at base; in such case the clypeus usually extends nearly from eye to eye.....33.
33. Abdomen sessile or subsessile, with plain furrow or sharp carinæ on petiole; seldom subpetiolate, but if so, always with prominent carinæ.
TRYPHONINI.
Abdomen petiolate, the petiole at base without groove or carina, at least the latter are never prominent.....MESOLEPTINI.

Tribe METOPINI.

1. Face with a distinct shield; middle tibiæ with a single spur.....2.
Face without a distinct shield; middle tibiæ with two spurs.....3.
2. Head small; basal segment of abdomen flat above; wedge shaped; ovipositor large, long and geniculate.....**Cultrarius** Davis.
Head normal; basal segment of abdomen pyramidal or oval above; ovipositor rarely visible.....**Metopius** Panz.
3. Eyes distinctly emarginate; parallel dorsal carinæ on first three abdominal segments; scutellum margined.....**Pseudometopius** Davis.
Eyes not emarginate.....4.
4. Face oval, elongate, clypeus wanting; abdomen broadly sessile at base.
Tylecomnus Holmg.
Face transverse; clypeus more or less distinct.....5.
5. Tarsal claws not pectinate; clypeus scarcely separated.....6.
Tarsal claws pectinate.....7.
6. Scutellum depressed: abdominal segments constricted at base.
Thibetoides Davis.
Scutellum elevated; segments of abdomen not constricted. **Lethades** Davis.
7. Abdomen broadly sessile, segments 2-4 constricted at base; scutellum elevated; clypeus large, protuberant.....**Catocentrus** Walsh.
Abdomen petiolate, clavate; scutellum broadly oval, margined.
***Sphinctus** Grav.

CULTRARIUS n. g.

Characterized by having the basal segment of abdomen short, wedge shaped, upper anterior portion broad, flat, slightly concave; the thorax is nearly spherical, produced by the widening of the

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meso- and shortening of the pro- and metathorax; the metathorax is depressed and flat to fit the basal segment of the abdomen; without distinct areolet. Head comparatively small, much narrower than thorax and set low on it; maxillary palpi with the second segment not greatly enlarged; antennæ small at base, strongly subclavate; ♀ with the large geniculate ovipositor exserted and longer than the body.

Cultrarius rileyi Marl. (*Metopius*), Proc. Ent. Soc. Wash., 104.

♀.—10 mm. Black, with the following parts marked with yellow: two short orbital lines opposite antennæ, spot between, spot beneath tegulæ, apical third of scutellum, two spots on each side of metathorax, the larger and outer one being just above the hind coxæ, four anterior tibiæ, apex of all the femora and apical margin of all the abdominal segments; remainder of legs and base of antennæ pale piceous; wings hyaline, with costal margin dusky, deepening toward the apex; facial shield coarsely, but sparsely punctured and very small margin; labrum and lower part of shield sometimes glabrous.

♂.—Unknown.

Six specimens from So. Dakota and Kansas (coll. U. S. Nat. Mus.).

METOPIUS Panzier.

(Kritsch. Revis., ii, 79, 1806.)

Characterized by having the basal segment of the abdomen above oval, or elevated pyramidal; by having a median and two lateral basal areas distinct on the oval metathorax, the lateral areas being more or less glabrous; by the second segment of the maxillary palpi being large and globular in the ♀ and enlarged in ♂; ovipositor small, rarely visible.

The species may be separated as follows:

Facial shield with distinct, vertical, median carina.
  Four posterior legs black and yellow; abdominal segments 2, 6 and 7 not margined with yellow.....**ultimatus** n. sp.
  Four posterior legs rufous; all the abdominal segments broadly margined with yellow.....**rufipes** Cress.
Facial shield without distinct median carina.
  Thorax and abdomen beyond segment two black, immaculate; wings fuliginous.....**basalis** Cress.
  Thorax black or piceous, with yellow markings.
    Abdomen with the apical segments entirely black, or narrowly yellow at apex.
      Segment two entirely black, or with yellow dots in apical corners.
        Wings hyaline, except a smoky patch on marginal and upper part of submarginal cells; basal segment of abdomen oval.
        errantia n. sp.
      Wings fusco-hyaline, or yellowish hyaline throughout.

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Basal segment oval and black, except apical corners; scutellum broadly yellow at apex; hind tibiæ piceous.
xanthostigma Ashm.
Basal segment pyramidal, mostly yellow: apex of scutellum narrowly yellow.
Postertor tibiæ and tarsi black, or with faint yellow line beneath.
pollinctorius Say.
Posterior tibiæ and tarsi yellow.....**nevadensis** Cress.
Segment two with yellow band at apex.
Wings fuliginous; basal segment pyramidal.....**robustus** Cress.
Wings yellowish hyaline; basal segment oval.
Abdomen at base and most of legs rufous.....**comptus** Cress.
Abdomen at base and legs black and yellow.....**scitulus** Cress.
Abdomen with apical segments entirely, or almost entirely yellow.
Segment two black with lateral yellow margins, segments 4-6 with black dorsal spots.....**bellus** Cress.
Segment two black, with apical margin red or yellow; segments 4-6 rarely with black spots.....**montanus** Cress.
Thorax and head rufous, with yellow, or yellow and black markings.
pulchellus Cress.

Metopius ultimatus n. sp.

♂.—15 mm. Black, with yellow markings as follows: facial shield, mandibles, second segment of maxillary palpi, scape beneath, orbits opposite, line in front of tegulæ, scutellum at sides, postscutellum, large and small spot above hind coxæ, apex of four anterior coxæ, trochanters and femora, four anterior tibiæ and tarsi, posterior coxæ above, trochanters, femora at apex and tibiæ at base, apical half of abdominal segment one and apex of segments 3-5; posterior tarsi, palpi and antennæ dusky; wings reddish fuscous throughout; facial shield with a distinct median vertical carina.

One specimen from Illinois (type coll. Amer. Ent. Soc.).

Metopius rufipes Cress., Proc. Ent. Soc. iv, 270.

♀.—15 mm. Black, with legs, two basal segments of abdomen, antennæ, palpi and mandibles, rufous; margin of facial shield, line before and large dot beneath tegulæ, large spot above posterior coxæ and smaller one within, scutellum and broad apical margin on all the abdominal segments, yellow; wings yellowish fuscous, hyaline at apex, costal margin fulvous.

One specimen from Colorado (type Amer. Ent. Soc.).

Metopius basalis Cress., Proc. Ent. Soc. A. N. S., 1879, xxvii.

♀.—23 mm. Black, with margin of facial shield, front of posterior femora, except at apex, stripe on four anterior tibiæ, apical half of abdominal segment one and large apical spots in corners of segment two, yellow: antennæ tapering toward apex; facial shield concave; wings uniform fuliginous; abdomen slender, with distinct median carina: segment one with only a shallow channel between the two elevations; abdominal segments biemarginate.

Type from Florida (coll. Amer. Ent. Soc.).

Metopius errantia n. sp.

♀.—10 mm. Black, with the following yellow markings: border of facial shield, anterior orbits, scape beneath, small spot in front and another beneath

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tegulæ, line on mesopleura, basal corners and apical margin of scutellum, trochanters, apex of femora, four anterior tibiæ and tarsi, basal half of first abdominal segment, lateral apical corners of segment two and apical margin of segments 3-5; basal two-thirds of antennæ, mandibles, palpi, four anterior femora and posterior tibiæ and tarsi, dusky rufous; wings hyaline, except a smoky patch on the marginal and upper portion of submarginal cells; stigma yellowish, third discoidal cell considerably broader at base than at apex; pleura and head shining, coarsely, but closely punctured; lateral basal areas of metathorax punctured nearly as much as the median; abdomen densely punctured and with median carina to the apex of segment five.

One specimen from Gaylord, Mich. (type coll. Mich. Agric. Col.).

This might be taken for *M. scrutatifrons* Cress., from Mexico, but differs decidedly in the structure of the two basal segments of the abdomen. The Mexican species has the basal segment long, flat, narrow and loosely connected with the second, while this species has the basal segment quadrate, oval above, and with only an apparent immovable suture between segments 1 and 2.

Metopius xanthostigma Ashm., Proc. U. S. Nat. Mus., xii, 438.

♂.—13 mm. Black, with face, except central oblong spot, scape beneath, humeral line, spot beneath tegulæ, apical half of scutellum, most of metapleuræ, large apical corners of the two basal segments of abdomen and broad apical margins of the following segments, four anterior tibiæ and tarsi, apex of all femora and base of hind tibiæ, yellow; posterior tibiæ and tarsi reddish brown; wings yellowish fuscous, stigma yellow, veins brown.

Type from N. Carolina (coll. U. S. Nat. Mus.).

Metopius pollinctorius Say (*Peltastes*), LeConte edition ii, 700.

♀.—13-16 mm. Black; yellow markings of varying width on the facial shield and extending above on the orbit, scape beneath, line in front of tegulæ, apex of scutellum, two dots on postscutellum, dot on pleuræ of metathorax, four anterior tibiæ at base, four posterior trochanters and femora at base, apex of abdominal segments 1, 3, 4 and 5, and apical corners of 2; antennæ and four anterior legs piceous; wings pale fuliginous, costal margin reddish brown; basal segment of abdomen with the two tubercles but slightly separated, segments 3-6 with a more or less distinct central carina.

♂.—The two males before me vary in having the entire facial shield, labrum, mandibles, palpi, spot on mesopleura, four anterior legs, stripe on front of posterior tibiæ and margin of the sixth abdominal segment yellow.

Five females and two males from Illinois, Massachusetts, New Jersey, Michigan, New York and Pennsylvania.

Metopius nevadensis Cress., Proc. Ent. Soc. A. N. S., 1879, xxvii.

M. edwardsii Cress., Proc. Acad. Nat. Sci. Phil., 1878, 367.

♂ ♀.—This western species differs from *pollinctorius* only in having the terminal abdominal segment more or less yellow at apex and all the segments more broadly yellow on apical margin; in having all the tibiæ, basal part of tarsi and line along the front of the four anterior femora and trochanters yellow and wings yellowish fuscous.

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Two females and seven males. The type *edwardsii* is from Washington, the others are all from Nevada. This is scarcely more than a distinct variety (coll. Amer. Ent. Soc.).

Metopius robustus Cress., Proc. Ent. Sec. A. N. S., 1879. xxvii.

♀.—18 mm. Piceous, with broad margins on facial shield, scape beneath, stripe beneath tegulæ, large spot on upper mesopleura, large and small spot above each hind coxa; scutellums, spot above on posterior coxæ, posterior trochanters and apex of femora beneath, nearly all of basal segment of abdomen, apical margin of segments 2 5, much broader on 3 and 4, yellow; wings fuliginous; antennæ piceous, tapering gradually to a point at apex.

Type from Maryland (coll. Amer. Ent. Soc.).

Metopius comptus Cress., Proc. Ent. Sec. A. N. S., 1879, xxviii.

M. laticinctus Cress., ibid. xxix.

♂ ♀.—13-14 mm. Head, thorax and apex of abdomen black, with lemon-yellow markings as follows: facial shield, except central line, anterior orbits, scape beneath, mandibles, labrum, palpi, broad line in front and another beneath tegulæ, apical half of scutellum, large and small dot above hind coxæ, four anterior legs, trochanters and base of tarsi on posterior legs, apical corners of basal segment of abdomen, apical half or three-fourths of segments 2 and 3 and more or less of the following enlarged on the sides; the legs, basal portion of abdomen, metathorax, tegulæ and antennæ are variable dusky rufous; wings fuscous, darker at apex; carinæ distinct on basal segment of abdomen, converging at apex and continuing in a more or less distinct tuberculate carina on the next four segments; facial shield with raised margin.

Four female specimens and one male from Colorado (type coll. Amer. Ent. Soc.).

Metopius scitulus Cress., Proc. Ent. Sec. A. N. S., 1879. xxix.

♂.—9 mm. Black, with the following yellow markings: margins of shield, anterior orbits, scape beneath, palpi, broad line in front and another beneath tegulæ, large and small spot above hind coxæ; scutellum, four anterior legs, except middle of femora and base of coxæ, hind legs except coxæ, most of femora and apex of tibiæ and tarsi, apical corners of first segment of abdomen and the following segments with apical margin, broadest on sides; antennæ rufous. Wings dusky yellow, stigma fulvous; facial shield concave vertically.

Type from Nevada (coll. Amer. Ent. Soc.). This is probably only a variety of *comptus*.

Metopius bellus Cress., Proc. Ent. Sec. A. N. S., 1879. xxviii.

♂.—16 mm. Black, with entire face, mouth, scape beneath, tegulæ, line in front, large spot beneath on pleura; scutellums, triangular spot on each side of metanotum; legs, except part of hind coxæ and upper part of hind femora, first segment of abdomen except base, lateral margins of segment two, lateral margins of third continuing nearly across the apical margin, segments 3 6, except extreme base and black dots at sides of each, pale yellow; wings yellowish hyaline; antennæ fulvous; abdominal segments 3-5 with distinct central carina.

Type from Nevada (coll. Amer. Ent. Soc.).

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Metopius montanus Cress., Proc. Ent. Soc. A. N. S., 1879, xxviii, ♂.

M. concinnus Cress., ibid. ♂.

M. mirandus Cress.; ibid. xxix, ♀.

♀.—13 mm. Black, with facial shield, except central line, scape, orbits at side, scutellum at apex and postscutellum, four anterior trochanters, parts of coxæ and apex of femora, abdominal segments 1 and 4–6 entirely, except at extreme base, and apical third of segment 3, yellow; basal half of antennæ, palpi, tegulæ, line in front and large spot beneath, spot on each side of metanotum, four anterior legs, posterior tibiæ, tarsi and femora without, apical half of segment 2 and middle fourth of segment 3, rufous; wings rufo-fuscous with dusky streaks; abdomen broad, clavate; hind femora and coxæ on the inside, black.

♂.—Same as the female in color markings, except that the rufous on the thorax and abdomen is replaced in part or entirely by yellow, and the hind femora and coxæ are entirely black and yellow; the wings have the same dusky streaks and the general form is the same, except that the abdomen in the male is slightly more slender.

One female and two male specimens from Colorado, Nevada and Sonoma County, California (types coll. Amer. Ent. Soc.).

Metopius pulchellus Cress., Proc. Ent. Soc. Phil., iv, 271.

♀.—10 mm. Rufous, with sutures more or less black, and with yellow markings as follows: face, palpi, scape, tegulæ, line in front, another beneath, a spot on pleura, a large and small spot above hind coxæ, apex of scutellum, postscutellum, four anterior legs except femora, trochanters, apex of femora, base of tibiæ and spot on coxæ of hind legs, abdominal segments 1, and 3–6 except base, and apical margin of segment 2; wings varied with fuscous spots, deepest on costal margin; abdominal segments biemarginate at apex; carinæ on segment 1 small and scarcely elevated; facial shield flat.

Three specimens, Colorado, Las Cruces, New Mex., and Rapid City, South Dakota (type, coll. Amer. Ent. Soc.).

PSEUDOMETOPIUS n. g.

This genus is closely allied to *Metopius*, but has no facial shield and the middle tibiæ are armed with two spurs. The head is transverse, broader than long; antennæ long, gradually tapering; eyes distinctly emarginate opposite insertion of antennæ; second segment of maxillary palpi not greatly enlarged as in *Metopius*. Thorax plump, strongly punctured; parapsidal grooves distinct; scutellum shelving, oval at apex, margined; metathorax reticulate. Abdomen not narrowed at base, deeply and coarsely punctured; segments 1–3 with dorsal parallel carinæ; ovipositor not exserted. Legs short, femora slender, not swollen.

Pseudometopius hagenii Cress. (*Metopius*), Trans. Am. Ent. Soc., iv, 168.

♂ ♀.—14 mm. Black, with yellowish white markings as follows: short line in emarginate portion of the eyes, an inverted U beneath antennæ punctured with two black dots on clypeus, spot beneath eyes, labrum, palpi, most of mandi-

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bles, tegulæ, line beneath, spot on anterior pleuræ, apex of scutellum, four anterior legs except coxæ and hind portion of femora, and basal portion of posterior tibiæ and tarsal segments. Wings hyaline, areolet large, subpetiolate, third discoidal cell rectangular, discoidal and subdiscoidal veins being parallel and almost straight; veins and stigma brown.

♂.—Differs in having the entire face, spot on scape beneath and more of the legs yellowish white.

Two females and three males from Massachusetts, Texas and Michigan (type, coll. Am Ent. Soc.).

Pseudometopius pulchripes Prov. (*Chorinæus*). Faune Ent. Can. ii, 800.

♀.—9 mm. Black, with the mandibles, tegulæ, line beneath, and apex of four anterior femora pale yellow; anterior tibiæ white, the four posterior ones white at base and black at extremity; antennæ black, filiform, longer than body. Thorax gibbous in front, the meta with raised lines forming an areolet on the disc. Wings slightly dusky, nervures and stigma black; areolet triangular, subpetiolate. Abdomen punctured, elongate, clavate at extremity; first segment with two carinæ on the disc, confluent at apex; second segment with a median carina only at apex, which is divided at the base and forms an elongated areolet; third segment with a median carina; ovipositor not exserted.

Captured at Chicoutimi, Canada.

Provancher's type in the Quebec Museum is the only representative to my knowledge. The description given here is a liberal translation of that made by Provancher.

TYLECOMNUS Holmgren.

(Dispos. Method. Exochorum Scandinaviæ, 1873.)

Trachyderma Grav., Ichneumonologia Tom. iii, 283, 1829 (preoc. in Coleoptera).

Head transverse, oval, elongate and narrowed toward the mouth; face densely punctured and covered with long pile; antennæ long, tapering; eyes not emarginate; palpi slender. Thorax large, closely punctured and pilose, parapsidal grooves wanting, scutellum rather large and margined only at base, median and lateral areas present on metathorax. Abdomen scarcely narrowed at base, scabrous, forming more or less distinct longitudinal aciculations, apex of segments biemarginate. Legs strong, well developed, femora swollen.

Areolet present; second abdominal segment with two parallel carinæ.
Coxæ black; wings fuliginous.....**umbrosus** n. sp.
Coxæ rufous; posterior tibiæ black at base and apex: wings dusky hyaline.
indigus n. sp.
Areolet wanting; second abdominal segment without carinæ...**minoris** n. sp.

Tylecomnus umbrosus n. sp.

♀.—13 mm. Black to piceous, with legs except coxæ, rufous; palpi and mandibles dusky rufous; antennæ black, nearly as long as body; metathorax mucronate, median area of metanotum broad, rectangular. Wings fuliginous, nervures

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and stigma black; areolet large, petiolate, third discoidal cell rectangular, not narrowed at base. Abdomen with the last two segments retracted; first two segments with two parallel, longitudinal carinæ; ovipositor not exserted.

Nine specimens from Nevada and Washington (types, coll. Am. Ent. Soc. and G. C. D.).

Tylecomnus indigus n. sp.

♂ ♀.—13 mm. Black, pilose; four anterior legs rufous, posterior pair rufous, except apex of femora, base and apex of tibiæ and their tarsi, which are piceous; palpi dusky rufous; antennæ long, piceous; wings dusky hyaline, nervures and stigma brown, areolet large, subpetiolate, third discoidal cell not narrowed at base; metanotum mucronate, median area elongate, much narrowed toward apex. Abdomen with the last two segments retracted; first two segments with parallel, longitudinal carinæ; ovipositor not exserted.

One female and one male from Colorado and Franconia, N. H. (Mrs. Slosson). Types, coll. G. C. D. and Am. Ent. Soc.

Tylecomnus minoris n. sp.

♀.—6 mm. Black, with ferruginous legs; hind tibiæ and tarsi brownish red, the former with a white annulus near the base; tegulæ and line beneath yellow. Wings hyaline, nervures and stigma brown; areolet wanting, third discoidal cell not narrowed at base, rectangular. Head and thorax as in the preceding species, antennæ slightly shorter. Abdomen not as deeply punctured as in the two preceding species, and without the parallel carinæ beyond the first segment, neither are the segments biemarginate at apex; the ovipositor is also exserted 1 mm. and with vertical guides, but otherwise the same.

One specimen from New Hampshire (type, coll. Am. Ent. Soc.).

This species may form the type for a new genus.

LETHADES n. g.

Rather coarsely and closely punctured. Head large, transverse, excavated behind; face with a sharp tubercle beneath antennæ; clypeus separated by a subobsolete depression. Thorax robust, subdepressed above; mesopleuræ strongly inflated; scutellum elevated, oval, margined at base; metathorax areolated, obsoletely so at base. Abdomen depressed, broadly oval above, subcompressed at apex; disc of basal segment inflated and with carinæ; ovipositor exserted, curved upward. Wings with an areolet. Legs moderately robust.

Lethades texanus Ashm., Proc. U. S. Nat. Mus., xii. 442.

♀.—8 mm. Black, with the mandibles, scape beneath at apex, triangular spot on lateral anterior angles of mesonotum, tegulæ, line beneath, apex of scutellum, postscutellum, broad apical margins of all abdominal segments, anterior coxæ, base of tibiæ and knees of all legs yellow; rest of legs dusky red tinged with yellowish; hind coxæ and femora black. Wings subhyaline, nervures and stigma reddish brown; areolet sessile, obliquely subrhomboidal; cubito-discoidal nervure strongly arched and broken near base; transverse median nervure unites much back of basal.

Two specimens from Texas (type, coll. U. S. Nat. Mus.).

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THIBETOIDES n. g.

Body closely and deeply punctured. Head disc-shaped; face slightly inflated; clypeus obsolete, but with a transverse groove close above the mouth. Thorax compact, subspherical, a little longer than broad; upper margin of humerus raised very high; scutellum large, depressed, broadly oval, margined; metathorax completely areolated. Abdomen very broad, sessile; all the segments beyond the first with two transverse impressions, the deeper one constricts each segment at the base, the broader one distinctly constricts about two-thirds of the way to the apex; basal segment strongly carinate on disc. Wings with an areolet.

Thibetoides flosamoris n. sp.

♀ (?).—6 mm. Black and strongly pilose, with mandibles, palpi, humeral line, legs and apical third of all abdominal segments, except the first, which is narrowly pale yellow; coxæ, trochanters and hind tibiæ and tarsi more or less stained with fuscous; antennæ reddish brown, paler beneath; wings fuscous, nervures and stigma brown, paler at base; areolet oblique, petiolate; cubito-discoidal nervure strongly arched; basal and superior median areas broader than long; basal segment of abdomen as broad at apex as the following segments, carried close to metathorax, coarsely reticulate; second segment aciculately punctured at base, apex of abdomen curved beneath, ovipositor not exserted.

One specimen from Siskiyou County, California (type, coll. U. S. Nat. Mus.).

CATOCENTRUS Walsh.

(Trans. St. Louis Acad. of Science, iii. 89, 1873.)

Body closely and deeply punctured and pilose. Head disc shaped, face protuberant; clypeus transverse, protuberant; antennæ moderate. Thorax oval, gibbous, scutellum elevated, declivous behind; meta rugose, areolated. Abdominal segments 2–4 constricted at base and impressed near the apex, making the apical margins prominent; first segment short, oval, prominent, scarcely narrowed at base; ovipositor exserted, short. Wings with an areolet. Legs short, rather slender; posterior tarsi shorter than tibiæ; tarsal claws pectinate.

Catocentrus philanthoides Cress. (*Tryphon*), Trans. A. E. S. ii, 110; Walsh, Tr. St. Louis Acad. iii. 90.

♀.—8 mm. Black, with scape beneath, two spots on face above clypeus, anterior humeral spots, scutellums, apical margins of all abdominal segments, broadest on first, four anterior legs, except femora and coxæ, knees, and tibiæ, except apex of hind legs, yellow; remainder of legs, mouth-parts and tegulæ piceous; antennæ dusky red; wings with the anterior and apical portion yellowish fuscous, remainder subhyaline; nervures and stigma reddish brown.

Illinois (type, coll. Amer. Ent. Soc.).

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Tribe **EXOCHINI.**

1. Abdomen petiolate, sometimes broadly so; spiracles of first segment placed in or behind the middle.....2.
   Abdomen sessile, or nearly so; spiracles of first segment placed in or before the middle.....5.
2. Hind tibiæ with a single small spur.....**Periope** Curtis.
   Hind tibiæ with two spurs.....3.
3. Areolet wanting; second member in ♂ antennæ excavated.
   Alcocerus Foer.
   Areolet present.....4.
4. Metanotum smooth and glabrous.....**Exochoides** Cress.
   Metanotum areolated; face slightly convex....* **Ischyrocnemis** Holmg.
5. Metanotum not areolated at base; petiole long and clavate.
   * **Colpotrochia** Holmg.
   Metanotum usually areolated at base; petiole broad and short.....6.
6. Second abdominal segment with median carina.....**Chorinæus** Holmg.
   Second abdominal segment without median carina.....7.
7. First member of flagellum decidedly longer than the second.....8.
   First member of flagellum not or scarcely longer than the second, and the following segments very short.....12.
8. Pleural areas of metathorax not separated by a transverse carina.....9.
   Pleural areas of metathorax usually separated by a sharp transverse carina.10.
9. Areolet present.....**Triclistus** Foer.
   Areolet wanting.....† **Amesolytus** Foer.
10. Vertex separated from occiput by a sharp ridge.....**Metacœlus** Foer.
    Vertex and occiput without sharp ridge between them.....11.
11. Metanotum with three median carinæ.....* **Polyclistus** Foer.
    Metanotum with two median carinæ.....**Exochus** Grav.
12. Vertex separated from the occiput by a sharp ridge; abdomen broad, clavate.
    Hyperacmus Holmg.
    Vertex oval, without sharp ridge; abdomen long, truncate at apex.
    Mimas Davis.

PERIOPE Curtis.

(Guid. ed. i, App., 538a.)

Monoplectron Holmgren, Monog. Tryph. Suec. 305, 1856.

Oligoplectron Foerster, Synop. Fam. und Gatt. Ich., 1868.

Periope æthiops Cress. (*Tryphon*), Trans. Amer. Ent. Soc. ii, 106.

♂.—7 mm. Black, with the tegulæ, large stripe beneath, front legs beyond middle of femora, basal half of four posterior tibiæ, apex of middle femora and most of venter yellow; four posterior tarsi yellowish brown; antennæ brown, dark fulvous on apical half; wings subhyaline, nervures and stigma brown; areolet present, triangular; stigma thick, rounded on each side, making it elongately elliptical; second recurrent nervure sinuate; head flat, much elongate beneath; face oval, pilose; clypeus large, not separated; ligula long, as in Apidæ, palpi slender; antennæ large, strongly clavate and with short segments; thorax broader than head, subrotund, pilose; mesothorax closely punctured; parapsidal grooves present anteriorly; metathorax oval, obliquely truncate, areolated, apical areas large, basal transverse carina wanting, metapleura polished, sparsely punctured; abdomen compact, oval above, subclavate, punctured and pilose; basal

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segment broadly petiolate, strongly arched above and with dorsal carinæ; legs short, compact, femora incrassate; posterior tibiæ with a single, large, long, white spur.

Massachusetts and Toronto, Canada (type, coll. Amer. Ent. Soc.).

ALCOCERUS Foerster.

(Synop. der Fam. und Gatt. der Ich., 1868.)

The characters given by Foerster in separating the genus are already given in the synopsis. To this genus belongs Mr. Cresson's *Exochoides concinna* and *mexicana* from Mexico, and *valida* from Cuba. There is but a single known species at present in the U. S.

Alcocerus trifasciatus Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 276.

♂ ♀.—9-10 mm. Black, with the following yellow markings: antennæ, palpi, tegulæ, scutellums, apical third of first three segments of abdomen, genitalia, more or less of coxæ and femora, trochanters, tarsi and tibiæ, except tips of posterior pair; wings dusky hyaline, nervures brown; head and thorax pilose; antennæ sometimes dusky.

Three females and two males from Pennsylvania, North Carolina and New York (type, coll. Amer. Ent. Soc.).

EXOCHOIDES Cresson.

(Trans. Amer. Ent. Soc. ii, 37, 1868.)

This genus is at once separated from *Ischyrocnemis* Holmgren by having the metanotum smooth and shining instead of punctured and areolated. It differs also in having the spiracles slit-like instead of oval; otherwise the two genera agree closely.

Exochoides texanus Cress., Trans. Amer. Ent. Soc. iv, 167.

Ischyrocnemis carolina Ashm., Pr. U. S. Nat. Mus., xii, 443.

♂.—7-9 mm. Black, with yellow markings as follows: scape, mandibles, palpi, tegulæ, line beneath continuing backward under wings and scutellum, line in front on upper margin of prothorax; prothorax except portion beneath this line, scutellum, metanotum except black transverse line at base, petiole of abdomen except spot between spiracles, apical half of segments two and three, apical third of segments four and five, all of the terminal segment and all of legs, except spot on posterior coxæ and inner part of posterior femora; antennæ fulvous; all of the yellow markings on the thorax except the tegulæ, coxæ, posterior femora and base and apex of posterior femora are yellowish ferruginous; wings hyaline, with a faint dusky spot on the front apical margin, stigma yellow, veins brown; areolet complete, petiolate; head and thorax pilose.

Two specimens from Texas and North Carolina (types, coll. Am. Ent. Soc. and U. S. Nat. Mus.)

CHORINÆUS Holmgren.

(Monographia Tryphonidum Sueciæ, p. 320, 1856.)

Head transverse; vertex subtruncate; face somewhat protuberant; clypeus not separated. Thorax robust; longitudinal carinæ promi-

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nent on meta; scutellum broad, flat and distinctly margined on sides and apex. Legs rather short; femora swollen, but not as much as in *Exochus*. Wings without areolet. Abdomen sessile, with second and often third and fourth segments with longitudinal carinæ.

Our species may be separated by the following minute, though apparently constant, characters:

Metapleura entirely smooth, or with two or three short carinæ converging to the junction with hind coxæ.
Second abdominal segment with only a median carina, or if more it is rugosely aciculate.
Abdomen not constricted between second and third segments; face yellow. **carinatus** Cress.
Abdomen strongly constricted between segments two and three; face rufous. **constrictus** n. sp.
Second abdominal segment with a median and two distinct lateral carinæ.
Metathorax with seven longitudinal carinæ; upper center of second recurrent nervure with a long stump of a vein extending into the third discoidal cell..... **excessorius** n. sp.
Metathorax with six carinæ, or a partial seventh.
Basal segment of abdomen with four carinæ..... **texanus** Cress.
Basal segment with five carinæ.
Face black, with pale orbital lines..... **opacitas** n. sp.
Face yellow, or reddish yellow..... **cariniger** Walsh.
Metapleura longitudinally aciculate.
Mesopleura longitudinally or diagonally aciculate above middle coxæ; three distinct carinæ on third abdominal segment.
Upper part of metapleura either aciculate or distinctly punctured. **ouitis** n. sp.
Upper part of metapleura smooth, polished.
Posterior femora rufous; carinæ on third abdominal segment large, distinct. **costatus** n. sp.
Posterior femora black; carinæ on third abdominal segment short, weak. **pusillus** n. sp.
Mesopleura polished above middle coxæ.
Third abdominal segment without carina; face and hind coxæ black. **pleturus** n. sp.
Third abdominal segment with carinæ at base; face ferruginous; hind coxæ rufous, dusky at base..... **mariatti** Ashm.

Chorinæus carinatus Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii. 273.
C. californicus Ashm., Trans. Amer. Ent. Soc. xxiii, 200.

♂ ♀.—6-7 mm. Black, pilose, with face, palpi, sometimes scape beneath, tegulæ, and more or less of venter, lemon-yellow; legs ferruginous, with base of posterior tibiæ, four anterior coxæ, trochanters, and apex of femora, yellowish; sometimes posterior coxæ are blackish; antennæ long, reddish brown; mesonotum shining, sparsely punctured and with median depression; metanotum shining, the two median carinæ widely separated; metapleuræ polished and with a few short carinæ converging to the hind coxæ; wings nearly hyaline, nervures and stigma reddish brown; abdomen often scabrous on first two or three segments,

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shining and coarsely punctured on the others; basal segment with four, and sometimes with part of a fifth carinæ; segment two, and sometimes three and four with a median carina.

Four females and six males from Connecticut, New Hampshire, Michigan, Canada and California (Ashmead). Type, coll. Amer. Ent. Soc.

Chorinæus constrictus n. sp.

.—4 mm. Black, pilose, with face, orbital line above and antennæ dark fuscous; legs and tegulæ pale rufous; legs and antennæ short and thickset; mesonotum polished, finely punctured; six distinct carinæ on metanotum; pleuræ polished, shining; abdomen with the two basal segments coarsely punctured, depressed, flat; the remaining segments, except at base of third, are oval, nearly cylindrical, which gives the abdomen a very peculiar appearance and makes a strong constriction between the second and third segments; basal segment with five carinæ, the median one being small, but distinct; second segment with only the median carina; remaining segments with no carina, finely punctured and strongly pilose.

One specimen from Franconia, N. H. (Mrs. Slosson). Type, coll. G. C. D.

Chorinæus excessorius n. sp.

♀.—6 mm. Black, with white pile; face, mouth-parts, except tips of mandibles which are black, scape beneath and tegulæ, lemon-yellow; legs ferruginous, with base of posterior tibiæ and four anterior legs paler; antennæ reddish brown; wings hyaline, nervures and stigma brown; second recurrent nervure angularly broken above the middle and from it extends a spurious vein one-fifth the distance across the third discoidal cell; thorax polished, shining; mesonotum finely punctured; metanotum shining, with a central carina between the two median carinæ, making seven carinæ on the metathorax; metapleuræ shining and with the short carinæ converging to coxæ; mesopleuræ sparsely and finely punctured above middle coxæ; abdomen oval, clavate, coarsely and not closely punctured on basal segment closely on second and third and gradually becoming smaller on the remaining segments; five carinæ on basal segment, three on the second, one on the third; ovipositor short, straight.

One specimen from Washington (coll. Amer. Ent. Soc.).

Chorinæus texanus Cress. (*Exochus*). Trans. Amer. Ent. Soc. iv, 168, ♂.

♀ ♂.—6-7 mm. Black, with face and mouth-parts lemon-yellow, more or less tinged with rufous; palpi, scape beneath and tegulæ pale; legs ferruginous, anterior pair paler; wings hyaline, nervures and stigma reddish brown; second recurrent angularly broken above the middle; thorax polished; mesonotum punctured; metanotum with six carinæ; metapleuræ with short carinæ converging to coxæ; abdomen elongate, closely punctured, opaque on second and third segments; basal segment with four carinæ, second segment with three carinæ; third segment with median carina not reaching the apex.

The type is in the U. S. Nat. Mus. and is from Texas. A second specimen (♀) from Colorado is in the collection of Amer. Ent. Soc.

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Chorinæus opacitas n. sp.

♀.—5.5 mm. Black, pilose, with anterior orbital lines, spot on cheeks beneath eyes, clypeus and mouth-parts, yellow; tegulæ and antennæ dark brown; legs rufous, apex of posterior femora and posterior tarsi dusky; posterior coxæ black, piceous at apex; wings dusky hyaline, nervures and stigma brown, second recurrent not broken in the middle; mesonotum finely punctured; metanotum with six carinæ and spinose at apical corners; metapleuræ with short, converging carinæ above coxæ; abdomen finely and about evenly punctured on all the segments; basal segment with five carinæ, second with three, the two lateral ones rather small, and the third segment with a faint median carina.

One specimen from Nevada (coll. Amer. Ent. Soc.).

Chorinæus cariniger Walsh (*Polyrhabdus*). Trans. St. Louis Acad. iii, 98.
Chorinæus flavifrons Ashm., Proc. U. S. Nat. Mus. xii, 444, ♀.

♀ ♂.—6-7 mm. Black, with face, mouth-parts and tegulæ yellow, shaded sometimes with rufous; legs rufous, with four anterior ones and base of posterior tibiæ and tarsal segments often paler; posterior coxæ sometimes piceous; wings slightly dusky, nervures and stigma brown; second recurrent angularly broken; antennæ brown, long, tapering; thorax as in the preceding, six carinæ on metathorax, the two outer less distinct; abdomen elongate, closely punctured, most so on second segment; basal segment with five carinæ; second with three distinct; third with the three on basal half, sometimes the two lateral ones are wanting on basal half of third segment.

Three females and two males from Illinois, Michigan, Washington, Connecticut and Wisconsin (Ashmead). Type in U. S. Nat. Mus.

Chorinæus onitis n. sp.

♀.—7 mm. Black, robust, with face, cheeks, mouth-parts and scape beneath, lemon-yellow; flagellum reddish brown, paler beneath; legs rufous, anterior ones paler; four posterior coxæ black; posterior femora blackish; posterior tibiæ at base pale yellow; wings hyaline, nervures and stigma dark brown; tegulæ black; head thick, distinctly swollen above clypeus; thorax broad, depressed, flat above; mesonotum sparsely punctured and with median longitudinal groove passing over scutellum to apex; metanotum with six carinæ, strongly mucronate at apical corners; metapleuræ longitudinally aciculate on posterior half, except immediately beneath the outer carinæ, where it is coarsely punctured; mesopleura very finely punctured, striate above middle coxæ; abdomen shining, coarsely punctured; four carinæ on basal segment, three on the second and same number on basal half of the third segment; in one specimen the median carina extends onto the basal half of the fourth segment.

♂.—Differs in having the yellow extend farther on the face and cheeks, flagellum yellow beneath on basal half, four anterior legs entirely yellow, tegulæ yellow on basal half, posterior femora ferruginous, having the three carinæ extend to the apex of the third abdominal segment and in having the metapleura aciculate up to the outer carina of metathorax.

Two females and one male from Mt. Washington, N. H. (Mrs. Slosson). Type, coll. G. C. D.

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Chorinæus costatus n. sp.

♀ ♂.—4-6 mm. Slender, black, pilose; face, mouth-parts, cheeks beneath and tegulæ, lemon-yellow; legs: in ♀ uniform ferruginous, in ♂ two anterior pairs paler, and posterior coxæ blackish; wings dusky hyaline, nervures and stigma reddish brown; antennæ brown, paler beneath; mesonotum rather coarsely punctured; metanotum with six carinæ, mucronate at outer apical corners; metapleuræ longitudinally aciculate, except in upper anterior corner, which is polished; mesopleuræ punctured, aciculate above middle coxæ; abdomen shining, coarsely punctured, carinæ prominent and extending nearly to the apex of the third segment: basal segment with five carinæ; femora incrassate.

One female and two males from New Hampshire and Connecticut (types, coll. Amer. Ent. Soc.).

Chorinæus pusillus n. sp.

♀ ♂.—4-6 mm. Black, pilose; face and mouth-parts lemon-yellow, except oval spot beneath antennæ, suture above clypeus and base and apex of mandibles, which are brown; legs vary from pale rufous in front legs to almost entirely black in hind leg; the posterior coxæ and femora are black, and usually the same of the middle legs; anterior femora usually pale; apex of trochanters and base of tibiæ in hind legs, rufous; wings hyaline, nervures brown; antennæ brown, six carinæ on metathorax; metapleuræ longitudinally aciculate, finely punctured on upper anterior portion; mesopleuræ minutely punctured, aciculate above middle coxæ; abdomen short, thickset, clavate in ♀, subclavate in ♂, shining, finely punctured; five carinæ on basal segment, three on second and extending, rather faintly, onto the base of the third.

Two females and two males from Washington, Colorado and Mt. Washington, N. H. (Mrs. Slosson). Types, coll. G. C. D. and Amer. Ent. Soc.

Chorinæus pleturus n. sp.

♀.—7 mm, Black, robust, with legs, mandibles and antennæ dark rufous; palpi and tegulæ whitish; orbital lines in emarginations each side of antennæ and spot on face between antennæ, yellow; scape and posterior coxæ black; wings subhyaline, nervures and stigma reddish brown; mesonotum finely punctured; metanotum with six carinæ, not strongly mucronate at apical corners; metapleuræ with aciculations running diagonal toward coxæ, and only on apical third; mesopleuræ without aciculations, minutely punctured; abdomen depressed on first two segments, subcylindrical and slightly clavate beyond; basal segment with four carinæ, the two median being rather widely separated; second segment with three carinæ, the lateral ones not reaching half way across, the median one extending the whole length of the segment.

One specimen from Agricultural College Michigan (type, coll. Michigan Agricultural College).

Chorinæus marlatti Ashm., Trans. Amer. Ent. Soc. xxiii. 200.

♀.—4 mm. Black, with face, antennæ, mouth-parts, tegulæ and legs, except hind coxæ, which are blackish at base, honey-yellow; wings hyaline, nervures and stigma brown; mesonotum shining, polished, scarcely punctured; metanotum with the usual carinæ; metapleuræ longitudinally aciculate above hind coxæ; remainder of meta- and all of mesopleuræ polished and without distinct punc-

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tures; abdomen shining, subclavate, somewhat depressed at base; second segment and basal two-thirds of third segment coarsely punctured; apex of third and basal two-thirds of following segments finely punctured; apex of segments polished, scarcely punctured: median carina reaches the apex of third segment, lateral carinæ reach only as far as the segment, is coarsely punctured.

One specimen from Illinois and the type from Kansas (type, coll. Ashmead).

TRICLISTUS Foerst.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Head transverse; face convex, protuberant, clypeus not separated, eyes emarginate. Thorax robust, somewhat depressed above, metanotum polished, not completely areolated. Abdomen broadly sessile, polished, genitatia hidden, or only slightly exserted; areolet of wings so variable in wings of individuals of some species that *Amesolytus* cannot be separated from it by this character alone; legs short, strong, femora incrassate.

To this genus belongs Cresson's *Exochus varipes* (locality?) and *E. pulchripes* of Mexico.

The following characters may be used to separate our species:

Thorax black.
- Face and abdomen entirely black.
  - Coxæ black, at least posterior pair.
    - Legs brown, nearly black ..... **brunnipes** Cress.
    - Legs ferruginous ..... **congener** Holmg.
  - Coxæ and legs ferruginous; size large, areolet small ..... **curvator** Fab.
  - Coxæ and legs fulvo-ferruginous; size small, areolet large. **pygmæus** Cress.
- Face yellow to dusky red, venter and two apical segments of abdomen rufous. **apicalis** Cress.

Thorax and abdomen rufous, or nearly so.
- Posterior tibiæ with white annulus; face white ..... **ferrugineus** Ashm.
- Posterior tibiæ not annulate with white.
  - Face piceous; thorax without white markings ..... **thoracicus** Ashm.
  - Face white; thorax with white markings ..... **atriceps** Walsh.

Triclistus brunnipes Cress. (*Exochus*), Proc. Acad. Nat. Sc. Phil. 1878. 374.

♀.—5 mm. Black, legs dark brown to piceous, coxæ black; mandibles and palpi rufous; tegulæ black; antennæ brown, scape black; abdomen shining, impunctured, basal segment without central groove or carina; wings rufo-hyaline, veins and stigma reddish brown, paler at base.

Two specimens from Nevada. Type, coll. Amer. Ent. Soc.

Triclistus congener Holmgren (*Exochus*), Mon. Tryphon. Suec. 319.

♀ ♂.—7-8 mm. Black; legs, except coxæ, ferruginous; tegulæ and palpi pale; abdomen smooth, shining, with only a few shallow, scattering punctures, more common in ♂; carinæ on basal segment extending nearly to middle of the segment in ♀ and more prominent and a little beyond in ♂; wings rufo-hyaline; veins and stigma reddish brown.

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Two females and seven males from Nevada, Montana and Washington.

Triclistus curvator Fab. (Ichneumon), Ent. Syst. 117, 182 (1793).
Exochus fulvipes Cress., Proc. Ent. Soc. Phil. iii, 285.

♀ ♂.—7-8 mm. Differs from *congener* in having the legs entirely ferruginous; antennæ more or less rufous at base, paler beneath, and in having the wings nearer hyaline.

Six females and five males, Michigan, Illinois, Canada, New Hampshire, Pennsylvania, New Jersey, Colorado, Montana, Nevada, So. California and Washington.

Triclistus pygmæus Cress. (*Exochus*), Proc. Ent. Soc. Phil. iii, 285.

♀.—4 mm. Differs from *curvator* by being smaller, having the antennæ entirely dusky rufous, mouth-parts rufous, areolet larger, legs fulvo-ferruginous, posterior tibiæ and tarsi being yellowish white; abdomen shining, without puncture and without groove or carinæ at base.

Two specimens, Illinois, Canada (Cresson). Type, coll. Amer. Ent. Soc.

Triclistus apicalis Cress. (*Exochus*), Proc. Ent. Soc. Phil. iii, 285.
T. terminalis Ashm., Trans. Amer. Ent. Soc. xxiii, 201.

♂ ♀.—8 mm. Black, with venter and two apical segments of abdomen rufous; legs vary from a piceous black to ferruginous, with black coxæ; face, orbital lines and mouth-parts vary from lemon-yellow to a brown rufous; wings hyaline, veins and stigma reddish brown; thorax and entire abdomen pitted with coarse punctures; basal segment of abdomen without carinæ; abdomen is deep, oval.

Five specimens, Illinois, Massachusetts, New Hampshire and District of Columbia. Type, coll. Amer. Ent. Soc.

Triclistus ferrugineus Ashm. (*Amesolytus*), Tr. Am. Ent. Soc. xxiii, 201.

♀.—6-8 mm. Honey-yellow, with face, vertex, except ocelli, which are dark, tegulæ, line in front, more or less of four anterior legs, and of the hind legs the trochanters, apex of coxæ and femora, middle half of tibiæ and tarsi, yellowish white; base and apex of hind tibiæ nearly black; antennæ dark brown; wings hyaline, veins and stigma color of body, areolet wanting, submedian cell much longer than median; basal segment of abdomen with central groove, margined by distinct converging carinæ, which disappear a little beyond the middle; ovipositor ventral; head and thorax pilose.

Four females from Texas. Type, coll. Ashmead.

Triclistus thoracicus Ashm., Trans. Amer. Ent. Soc. xxiii, 201.

♀.—7 mm. Rufous, with legs lighter, and head, antennæ and apex of abdomen dark to piceous; wings hyaline, nervures and stigma piceous, areolet present, petiolate; no distinct carinæ at base of abdomen, metanotum scarcely carinate at base.

Type from Virginia, coll. Ashmead.

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Triclistus atriceps Walsh (*Exochus*), Trans. St. Louis Acad. Sci. iii, 95, ♂
Exochus rufomaculatus Prov., Add. Faune Hymen. 113, ♀.

♂ ♀.—6 mm. Pale rufous; head, lateral and anterior margins of mesonotum, region around scutellums and two apical segments of abdomen, black; extreme tips of femora, tibiæ and tarsal segments of hind legs, obfuscated; face, anterior orbits above, mouth, cheeks beneath, tegulæ, broad line along humeral suture, four front legs, and hind legs with tip of coxæ, trochanters, spurs and tarsi, yellowish white to white; thorax and abdomen with distinct, rather close, shallow punctures; carinæ on base of abdomen reaching one-third of the way back; wings subhyaline, veins and stigma black, areolet wanting.

Illinois and Canada.

Types not seen, and this description is condensed from Walsh's, which is very complete and minute in detail. Provancher's description agrees so well that there remains little doubt of the synonymy.

METACŒLUS Foerster.

(Synop. d. Fam. und Gatt. d. Ichn. 1868.)

Characterized by having the face strongly protruding beneath the antennæ and hollow and flat above, so that a sharp ridge is formed between the vertex and occiput.

Metacœlus lævis Cress. (*Exochus*), Proc. Ent. Soc. Phil. iii, 266.

♀ ♂.—5-7 mm. Brownish black, with the legs and palpi brownish red, and antennæ still darker; face pilose, closely punctured and with a dark red stain beneath the antennæ; mesonotum closely punctured; remainder of thorax shining, smooth, metanotum completely areolated; abdomen smooth, shining; basal segment with distinct carinæ; scape, posterior coxæ and femora incrassate.

Many specimens from Canada, New York, Michigan, Illinois, Colorado, Washington, Oregon and California.

This species may prove to be synonymous with *M. femoralis* Fourcroy, of Europe.

EXOCHUS Grav.

Grav. Ichn. Europæa, T. ii, p. 328 (1829).

Characterized by not having the face beneath the antennæ greatly produced, and by having the vertex oval, so that there is no sharp ridge between the vertex and occiput.

The species may be separated as follows:

Posterior tibiæ with an unabbreviated vitta; abdomen, except apex, rufous. **albiceps** Walsh.

Posterior tibiæ with a pale annulus.

Abdomen black, or dusky rufous at base.

Mesopleura, and usually most of thorax, rufous ..... **dorsalis** Cress.

Mesothorax not rufous ..... var. **annulicrus** Walsh.

Abdomen, except basal segment, rufous ..... **solitarius** n. sp.

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Posterior tibiæ pale, dusky or rufous at apex, and sometimes white at base.
Thorax with white humeral stripe or triangular spot in front of tegulæ, scutellums more or less pale.
Mesonotum black; abdomen finely punctured; first and second lateral areas of metathorax separated.
Abdomen black, or at least with only one or two segments narrowly pale at their apex.....**pallipes** Cress.
Abdominal segments two and three with lateral apical corners broadly yellow.....var. **pleuralis** Cress.
Mesonotum rufous, scutellums entirely yellow; abdomen coarsely punctured; first and second lateral areas of metathorax united.**ostentatus** n. sp.
Thorax without white spot or line in front of tegulæ; scutellums black; posterior femora and coxæ dusky to black.....**flavifrontalis** n. sp.
Posterior tibiæ unicolor.
Abdomen black, or with apical margins of segments narrowly pale.
Second abdominal segment polished or finely punctured; legs entirely rufous; no pale line in front of tegulæ.....**propinquus** Cress.
Second abdominal segment coarsely punctured: coxæ usually black; pale line in front of tegulæ usually present.....**atricoxalis** Cress.
Abdomen rufous, black at base, or base and apex.....**semirufus** Cress.

Exochus albiceps Walsh, Trans. St. Louis Acad. iii, 96.

♂.—4 mm. Rufous, with spot enclosing ocelli, lunate spot on occiput, spot on each lobe of mesonotum, dorsal spot on segment five of abdomen and the whole of segments six and eight, black; head, except the black portion and rufous face, white; thorax glabrous, polished; metathorax completely areolated; basal segment of abdomen carinate on basal half. "Legs are all dull luteous, with an abbreviated exterior vitta on each femur and an unabbreviated one on each tibia."

One male from Illinois. Type not seen and unknown.

Description taken from Walsh's.

Exochus dorsalis Cress., Proc. Ent. Soc. Phil. iii, 286.

♂ ♀.-5-7 mm. A variable species, whose general color is black, varied with honey-yellow and white; the head varies from black with dark rufous face, mouth-parts and cheeks to occiput and ocelli black, with the remainder of the head lemon-yellow; antennæ black to pale rufous; thorax varies from black with entire venter, meso- and metapleuræ, tegulæ, stripe in front and scutellums rufous, to the entire thorax being honey-yellow, with scutellums, tegulæ and stripe in front, yellowish white; abdomen varies from entirely black to pale piceous at base, growing darker toward the apex; the legs vary from rufous with posterior tibiæ black with white annulus and tarsi white, to all the legs being whitish, except the honey-yellow posterior coxæ and black base and apex of posterior tibiæ; thorax and abdomen shining, sparsely punctured; metathorax with the first and second areas sometimes separated, sometimes not; wings hyaline, veins and stigma brown.

This great variation is gradual and not due to sex or locality.

Five females and two males from Michigan, Canada, Illinois, Colorado, New Jersey and Mt. Washington, N. H. (Mrs. Slosson). Type, coll. Amer. Ent. Soc.

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Var. **annulicrus** Walsh. Trans. St. Louis Acad. iii, 95.

♂.—The markings of *annulicrus* are essentially the same as in *dorsalis*, except that the thorax and abdomen are black without rufous stains.

Two specimens, Michigan and New Hampshire.

Exochus solitarius n. sp.

♂.—6 mm. Head and thorax black; face, mouth-parts, spot above and another beneath eyes, tegulæ, line beneath and broad line in front, lemon-yellow; legs honey-yellow, with apex of all the femora, broad central annulus on hind tibiæ, basal segment of hind tarsi, basal half of four anterior tibiæ and spurs, white; four anterior coxæ and trochanters whitish; posterior tibiæ black at base and apex; antennæ brown, reddish beneath; scape black; wings hyaline, nervures brown; anterior wings wanting; thorax depressed, shining, and but slightly punctured; metathorax with first and second lateral areas united; flanks of the metathorax in front of the hind coxæ a deep ruby-red; abdomen polished, rufous, except basal three-fourths of first segment, which is black; basal half obscurely carinate.

One specimen from Canada. (Type, coll. Amer. Ent. Soc.)

Exochus pallipes Cress., Proc. Ent. Soc. Phil. iii, 287.

Exochus evectus Cress., Trans. Amer. Ent. Soc. iv, 168.

Exochus albifrons Walsh, Trans. St. Louis Acad. iii, 94.

Exochus xanthopsis Ashm., Trans. Amer. Ent. Soc. xxiii, 201.

♀ ♂.—5–7 mm. This is another variable species where scarcely three have the same color markings; the head is black, with face, except sometimes black central spot, mouth-parts, cheeks beneath and spot above eyes sometimes connected by anterior orbital lines, lemon-yellow; thorax varies from entirely black to the whole, except mesonotum, being rufous, or often yellowish white in ♂; tegulæ, line beneath, broad line or triangular spot in front, at least a transverse line at apex of scutellum and on postscutellum, and usually lateral lines on scutellum, white; sometimes the scutellum is entirely red; abdomen black, sometimes narrowly margined at apex of segments with rufous; polished, though distinctly punctured; carinæ rather prominent on the basal two-thirds of the first segment; mesonotum of thorax coarsely punctured; metanotum completely areolated; legs vary from rufous to pale honey-yellow; one has the basal two-thirds of posterior tibiæ entirely white, but all agree in having the apex of hind tibiæ dusky to black and usually in having the apex of the hind tarsal segments dusky; antennæ brown, paler toward apex, rufous beneath; wings hyaline, nervures and stigma reddish brown.

Sixteen specimens from Michigan, Illinois, Massachusetts, Connecticut, North Carolina, Victoria, Vanc. I. (Ashmead), Canada (Walsh) and Texas (Cresson). Individuals of this species have been bred from *Cacœcia fervidana* on black oak, *C. cerasivorana* on cherry; a *Tortrix* on hickory and one on poplar. (Type, coll. Amer. Ent. Soc.)

Var. **pluralis** Cress., Proc. Ent. Soc. Phil. iii, 286.

♂.—Differs from *pallipes* ♂ only by having the abdominal segments 2–4 with

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the lateral apical corners broadly yellow; the entire pleura and sternum are pale ferruginous.

Type specimen from Illinois (coll. Amer. Ent. Soc.).

Exochus ostentatus n. sp.

♂.—6 mm. Head yellow, except teeth, spot enclosing ocelli and part of occiput, which are black; antennæ rufous, scape yellow; mesonotum rufous, with a narrow black border; scutellums and remainder of thorax, except the black metanotum, pale yellow; legs yellowish white, with black annulus at apex of femora and tibiæ and longitudinal stripe on tarsi beneath on hind legs; abdomen black, with narrow apical margins and broad lateral apical corners of all the segments (least so on first and second) yellow; dorsum of abdomen and thorax pilose and coarsely punctured; metathorax with first and second lateral areas united; basal segment of abdomen strongly carinate; wings hyaline, stigma and nervures reddish brown.

One specimen from District of Columbia (coll. Amer. Ent. Soc.).

This specimen differs so much structurally as well as in color markings from *pallipes* and *pleuralis* that I feel warranted in giving it a new name.

Exochus flavifrontalis n. sp.

♀ ♂.—♀, 5 mm.; ♂, 3.5 mm. Black, with face, mouth-parts and scape beneath, lemon-yellow; coxæ black, tinged with rufous; four anterior legs, except coxæ, fulvo-ferruginous; posterior femora black or dusky, rufous at base, whitish at apex; tibiæ honey-yellow, white at base; posterior tarsi white; antennæ black, paler beneath toward base; wings hyaline; abdomen broad, coarsely and rather closely punctured; carinæ at base short; metathorax with first and second lateral areas united; mesonotum polished, finely punctured.

Two specimens from Michigan and Nevada. The Michigan specimen was taken in a larch tree May 2. Type, coll. Amer. Ent. Soc. and G. C. D.

Exochus propinquus Cress., Trans. Amer. Ent. Soc. ii, 114.

♀ ♂.—7-8 mm. Black, ♀ shining and polished, except on mesonotum and face, which are coarsely punctured, the latter densely so; ♂ in addition to that of the ♀ has the abdomen finely punctured; metathorax completely areolated; antennæ dusky rufous or brown; front beneath antennæ usually with a yellowish inverted V; palpi and legs rufous; tegulæ yellowish white; wings nearly hyaline, nervures and stigma reddish brown; basal segment of abdomen with strong carinæ reaching beyond the middle; antennal joints not strongly incised.

Four females and four males, Michigan, Connecticut, Maine and Massachusetts (Cresson). Type, coll. Amer. Ent. Soc.

Exochus atricoxalis Cress., Trans. Amer. Ent. Soc. ii, 114.

♀ ♂.—7-8 mm. Black, with abdomen and mesonotum coarsely and rather closely punctured; face closely punctured as usual; legs sometimes entirely rufous, but usually with all the coxæ black; antennæ dark brown or black, thickset and with joints incised, so that the segments are more distinct than in *propinquus*; tegulæ pale yellow; the other markings, which are sometimes wanting, or present

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in part are: upper margin of face beneath antennæ, orbital spot above eyes, broad humeral band in front of tegulæ, margins of scutellum and postscutellum, lemon-yellow: metathorax completely areolated; basal segment of abdomen with short, weak carinæ; wings as in *propinquus*, or slightly more dusky.

Seven females and four males from Texas, Dakotas, Colorado, Nevada, Montana, Washington and So. California. Type, coll. Amer. Ent. Soc.

Exochus semirufus Cress., Trans. Amer. Ent. Soc. ii, 114.

Mesoleius inflatifrons Prov., Add. Faune Hymen. 107, ♀.

Exochus rufigaster Ashm., Proc. U. S. Nat. Mus. xii, 443, ♀.

♀ ♂.—7-8 mm. Head and thorax black; legs entirely rufous; abdomen varies from entirely rufous to being black only on basal segment, or on two apical segments, or both; tegulæ, and sometimes a small spot on front between antennæ, pale yellow; antennæ dark reddish brown; face strongly pilose and but slightly protruded; mesonotum rather coarsely punctured; metanotum completely areolated; abdomen polished, or with only fine punctures; carinæ distinct on basal segment; femora not strongly inflated; wings yellowish hyaline; nervures and stigma reddish brown.

Six females and nine males from Michigan, Canada, Massachusetts and New Hampshire; Texas (Ashmead). Type, coll. Amer. Ent. Soc.

HYPERACMUS Holmg.

Monog. Tryphon. Suec. 322 (1855).

Head transverse; face strongly protuberant, punctured and pilose; vertex flat and separated from the occiput by a sharp ridge; antennæ with scape elongate, enlarged near apex; segments of flagellum numerous, broader than long; dorsum of thorax depressed, shining, metathorax areolated; abdomen sessile, oblong-ovate, subclavate, obtusely rounded at tip; femora incrassate.

Hyperacmus ovatus n. sp.

♀.—4 mm. Black, with legs honey-yellow; posterior coxæ in one specimen pale piceous; antennæ dusky red with the scape and base paler; protuberance beneath antennæ piceo-rufous, palpi yellowish white; abdomen broad, subclavate; basal segment with two faint converging carinæ on basal half; apex obtusely rounded, ovipositor slightly exserted; wings hyaline, nervures and stigma reddish brown; the entire dorsum is shining, finely punctured; face coarsely punctured; pleuræ shining, scarcely punctured.

Two females from Connecticut. One is labeled, "Bred from the case of woolen moth, May, 1805, J. H. E." Since this description was written I find this to be the same as Dr. Riley's *H. tineæ* which was bred from the clothes moth (*Tinea*), but never described. The specimens were from Michigan. Types, coll. Amer. Ent. Soc., G. C. D. and U. S. Nat. Mus.

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MIMA new gen.

Head transverse; face strongly protuberant, punctured and pilose; vertex oval and not separated from the occiput by a sharp ridge; scape of antennæ elongate, enlarged near the apex; segments of flagellum broader than long; dorsum of thorax flat, pilose; metathorax faintly reticulate; abdomen sessile, slender, elongate, compressed and truncate at apex; femora incrassate.

Mima washingtonensis n. sp.

♀.—5-8 mm. Black, with honey-yellow legs, apex of posterior tibiæ and tarsal segments and sometimes upper part of femora piceous; tegulæ, mandibles and palpi yellowish white; antennæ dark brown, scape black; wings fusco-hyaline, stigma and veins reddish brown; abdomen with three basal segments depressed, narrower than thorax, fourth segment scarcely as wide as the thorax and the remaining segments compressed and truncate at the apex; ovipositor exserted and lying along the truncated apex; thorax and abdomen sparsely and finely punctured.

Three specimens, all sent by Mrs. Slosson from Mt. Washington, N. H. Type, coll. G. C. D.

Tribe **ORTHOCENTRINI.**

Body small, thickset. Head transverse, sometimes buccate; eyes entire; face moderately or strongly protuberant, longitudinally convex; clypeus not, or obsoletely separated; antennæ with segments shorter and stronger in ♀ than ♂; apex often involute; scape elongate and enlarged. Thorax generally polished, somewhat elevated; metathorax distinctly areolated as a usual thing. Abdomen sessile, oblong; more or less compressed, sometimes strongly so in ♀; ovipositor short, scarcely exserted. Wings moderately broad; radial cell rather short; areolet pentangular, subtriangular or wanting; second recurrent nervure straight; anterior legs moderate, posterior ones rather long and strong; coxæ compressed; tarsal claws strongly produced.

Foerster separates the tribe into the following genera:

1. Ovipositor distinctly projecting beyond the apex of the abdomen.....2.
   Ovipositor not extending beyond the apex of the abdomen.....4.
2. Wings without an areolet.....† **Synoplus** Foer.
   Wings with an areolet.....3.
3. First member of flagellum shorter than the second..† **Mnesidacus** Foer.
   First member of flagellum as long as second .....† **Pterostigeus** Foer.
4. Mesopleuræ without carina or groove near the front border; metanotum without superior median area.....5.
   Mesopleuræ with distinct carina near anterior border .....8.
5. Posterior median area with a median carina.....**Brephoctonus** Foer.
   Posterior median area without median carina; metanotum without areolet.6.

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6. Cheeks not separated from the face by a groove; metanotum not spined. **Hypoleptus** Foer.
   Cheeks separated from face by a groove.....7.
7. Metanotum not spined; abdominal segment 3 longest: in ♀ segment 2 is strongly compressed.....**Neuratelus** Ratz.
   Metanotum with a single carina; segment 2 not longer than 3; abdomen of ♂ flat, of ♀ compressed more or less from the second or third segment. **Deleter** Foer.
8. Wings with an areolet; outer vein of same often translucent white.....9.
   Wings without areolet; rarely the second cubital nervure is a delicate transparent line.....11.
9. Face much broader than high; parapsidal grooves distinct on anterior half. **Tapinops** Foer.
   Face very long; mesonotum without parapsidal grooves.....10.
10. Members of flagellum average broader than long, rarely as long as broad; second abdominal segment with transverse impression before apex (?). **Atmetus** Foer.
    Members of flagellum all, or nearly all, longer than broad in ♀; second abdominal segment without transverse impression before apex. **Orthocentrus** Grav.
11. Pleuræ separated from mesonotum by an abbreviated groove; second abdominal segment has very distinct lunulæ; stigma of ♂ large and truncate; ovipositor shields in ♀ are broad; the section of the areolet between cubital and second recurrent nervure is fully three-fourths as long as first section of the marginal nervure..... * **Phænosemus** Foer.
    Mesothoracic pleuræ not separated by a groove: second segment without lunulæ; stigma of ♂ usually lanceolate; guides of ovipositor small; section of areolet between cubital and second recurrent nervures is scarcely half as long as first section of the marginal nervure.....12.
12. Stigma small and long, radius starting near the base. **Steuomacrus** Foer.
    Stigma quite broad, radius uniting at middle of stigma. **Camerotops** Foer.

BREPHOCTONUS Foerster.

(Synop. der Fam. und Gatt. der Ichneumonen, 1868.)

Brephoctonus californicus Ashm., Trans. Amer. Ent. Soc. xxiii, 202.

♂.—2 mm. Black, with face, mouth, scape, tegulæ and legs pale yellow; wings hyaline, nervures and stigma pale; body polished; metathorax and two basal segments of abdomen granularly shagreened, second segment somewhat aciculate; longitudinal carinæ present on metathorax, apical area large, subglabrous and with median carina.

California (type, coll. Ashmead).

HYPOLEPTUS Foerster.

(Synop. der Fam. und Gatt. der Ichneum., 1868.)

Hypoleptus columbianus Ashm., Trans. Amer. Ent. Soc. xxiii, 203.

♂.—2 mm. Pale piceous brown, with scape, legs and base of abdomen dirty yellowish white; wings hyaline, nervures and stigma pale, areolet wanting; body polished, basal segment of abdomen granularly shagreened and with prominent carinæ; longitudinal carinæ present on metathorax.

Washington, D. C. (type, coll. Ashmead).

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NEURATELUS Ratzeburg (Foerster's Synopsis).

Neuratelus leucopsis Ashm. (*Orthocentrus*), Bull. i, Col. Biol. Assoc., 24.

♂.—3 mm. Black, with lower half of head, antennæ, tegulæ and legs brownish yellow; hind coxæ and their femora blackish; wings hyaline, areolet wanting: body polished; basal segment of abdomen with very faint granulations and longitudinal wrinkles; metathorax without carinæ; second segment of abdomen compressed from base.

Colorado (type, coll. Ashmead).

DELETER Foerster.

(Synop. der Fam. und Gatt. der Ichn., 1868.)

Body entirely brownish ferruginous ..... **suffusens** n. sp.
Body black.
Petiole inflated above near base ..... **undulatus** n. sp.
Petiole not inflated near base nor undulating ..... **obscurus** n. sp.

Deleter suffusens n. sp.

♂.—2 mm. Brownish ferruginous, with antennæ and legs yellowish white; wings hyaline, nervures and stigma nearly transparent, areolet wanting; body polished; basal segment of abdomen longitudinally aciculate and undulating, the basal segment tuberculate on basal half and with deep rounded depressions behind it; carinæ on metathorax prominent toward apex; abdomen not compressed.

One specimen from New Hampshire and labeled "A. Koebele, collector." Type, coll. U. S. Nat. Mus.

Deleter undulatus n. sp.

♂.—2 mm. Black, with face, scape beneath, mouth parts, tegulæ and four anterior legs except tarsi and posterior trochanters, yellowish white; posterior legs and all tarsi brownish yellow; wings hyaline, nervures pale brown, stigma narrow, whitish translucent; discal cell narrowed at base, so that it is subtriangular; antennæ strong, dark brown; metathorax transversely rugulose and with lateral longitudinal carinæ, becoming more distinct near the apex; first segment of abdomen and base of second segment longitudinally rugulose, rest of abdomen hairy but polished, slightly compressed from apical portion of second segment; second segment longer than third, first segment longest; first segment depressed in center at base; spiracles before middle and around these spiracles the margins are greatly swollen, behind the swollen portion the margins are strongly depressed forming a broad, deep groove on either side and making the segment appear as though divided and composed of one thick and one thin segment.

♀.—Differs in having the front above the antennæ yellow and in having the abdomen strongly compressed from apex of segment 2.

Two specimens from Michigan and Illinois (Dr. Nason). Types, coll. G. C. D.

Deleter obscurus n. sp.

♂.—2.5 mm. Black, with face, antennæ, mouth-parts, tegulæ and legs pale yellowish brown; wings hyaline, nervures and stigma darker and the latter broader than in *undulatus*; third discoidal cell but little narrowed at base: mesonotum and base of metanotum sparsely punctured, apex of metathorax closely

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punctured and with lateral carinæ; basal segment of abdomen long, somewhat oval but not undulating, longitudinally rugulose, carinate; second segment longitudinally aciculate on basal three-fourths, apical fourth and remaining segments polished; compressed from apical portion of third segment; segments 2 and 3 with diagonal impressions at base.

♀.—Differs in having the face blackish to the clypeus, and in having the abdomen strongly compressed from base of third segment.

Two specimens from Michigan and Illinois (Dr. Nason). Types, coll. G. C. D.

TAPINOPS Foerster.

(Synop. der Fam. und Gatt. der Ichn., 1868.)

Tapinops emarginatus Say (*Ophion*), Lec. Ed. i, 380.

Exochiscus pusillus Walsh, Trans. St. Louis Acad. iii, 97, ♂.

Orthocentrus abdominalis Prov., Faune Ent. Can. ii, 435, ♀ ♂.

Orthocentrus californicus Ashm., Proc. U. S. Nat. Mus. xii, 442, ♀.

♂ ♀.—3 mm. Black, with legs and antennæ from honey-yellow to reddish brown; face dark to pale piceous; orbital spots above antennæ, palpi and tegulæ whitish; apex of abdominal segments 2-4 more or less rufo-piceous, sometimes segments 2 and 3 are dark piceous: wings hyaline, nervures and stigma pale brown; areolet pentangular; metathorax and basal segment of abdomen with distinct carinæ, and with the second abdominal segment are granularly shagreened and somewhat rugulose; face with transverse rows of setigerous tubercles; head slightly broader than long; flagellum with short, thickset segments; abdomen much more strongly compressed in ♀ than in ♂.

Many specimens from Canada, Massachusetts, New Hampshire, Michigan, Illinois, Mt. Hood, Oregon and Placer County, Cala.

ATMETUS Foerster.

(Synop. der Fam. und Gatt. der Ichn., 1868.)

Thorax and head largely reddish brown; body large....**californicus** Ashm.

Thorax black: body moderate.

Second abdominal segment polished, except at extreme base.**nigritus** Ashm.

Second abdominal segment shagreened, rugulose.....**carinatus** Prov.

Atmetus californicus Ashm., Trans. Amer. Ent. Soc. xxiii, 204.

♀.—5 mm. Legs, prothorax, antennæ, most of head, mesothorax and median segments of abdomen brownish ferruginous; rest black to piceous, polished; two basal segments of abdomen aciculately rugose longitudinally; metathorax areolated; wings hyaline, areolet large.

Two specimens from California (coll. Ashmead).

Atmetus nigritus Ashm., Trans. Amer. Ent. Soc. xxiii, 204.

♀.—2-3 mm. Black, with extremities and joints of legs more or less piceous or pallid; point beneath antennæ, elongate stripe on scape and tegulæ, whitish; wings hyaline, nervures and stigma pale, areolet small; face aciculately tuberculate on upper portion; metathorax areolated; abdomen strongly compressed; basal segment and extreme base of second longitudinally aciculate; rest of abdomen highly polished.

Five specimens from Ohio (Ashm.) and Illinois (Dr. Nason). Type, coll. Ashmead.

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Atmetus carinatus Prov. (*Orthocentrus*), Faune ii, 436, ♂.

Atmetus tetrazonatus Ashm., Trans. Am. Ent. Soc. xxiii, 204, ♀.

♂ ♀.—4 mm. Black, with legs and mouth rufous; face, antennæ and hind coxæ more or less piceous; median portion of abdomen more or less rufo-piceous; wings hyaline, nervures and stigma brown, areolet large; abdomen not distinctly compressed; two basal segments shagreened, rugulose; basal segment with moderately prominent carinæ, more distinct in ♂.

Many specimens from Michigan, Illinois (Dr. Nason), Canada and Colorado (Ashmead). Types, coll. Quebec Mus.; *tetrazonatus*, coll. Ashmead.

ORTHOCENTRUS Gravenhorst.

(Ichneumon, Europe iii, 358, 1829.)

Our species, some of the types of which are lost and classed here provisionally, may be separated as follows:

Face black, with long gray pubescence.....**pilifrons** Prov.
Face not strongly pubescent.
  Thorax entirely black.
    Posterior coxæ black or piceous; basal segment of abdomen aciculate, rest polished.....**nigricoxus** Prov.
    Posterior coxæ and third abdominal segment pale; two basal segments of abdomen finely shagreened.....**medialis** n. sp.
  Thorax more or less pale beneath.
    Abdominal segments 2 and 3 aciculate and with oblique depressions. **canadensis** Prov.
    Abdomen without distinct oblique impressions.
      Face yellow.....**trifasciatus** Walsh.
      Face black, mouth and cheeks white.....**lucens** Prov.

Orthocentrus pilifrons Prov., Faune Ent. Can. ii, 434.

♀.—4 mm. Black, with mandibles, palpi, scape beneath, tegulæ and four anterior coxæ and trochanters white; legs red, most of hind pair more dusky; face scarcely swollen and covered with long silvery pubescence; wings hyaline, areolet pentangular.

Provancher's type in the Quebec Museum is so badly mutilated that the species is difficult to place, but it apparently belongs to Cryptinæ. The head is very different from that of *Orthocentrus*. It is placed in this genus only temporarily.

Orthocentrus nigricoxus Prov., Add. Faune 369, ♀.

Mnesidacus apicalis Ashm., Trans. Am. Ent. Soc. xxiii, 202, ♀.

♂ ♀.—3 mm. Black; legs pale, hind femora and coxæ piceous to black; face and scape beneath dark rufous in ♀, lemon-yellow in ♂; abdomen black to piceous; basal segment and extreme base of second finely aciculate, rest polished; wings hyaline, areolet small.

Specimens from Canada, Illinois (Dr. Nason) and Washington, D. C. (Ashmead).

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Orthocentrus medialis n. sp.

♀.—3 mm. Black, with mouth, scape, orbital spots above antennæ, tegulæ, legs, third abdominal segment, apex of second and base of fourth, pale or whitish honey-yellow; face and rest of abdomen slightly piceous; antennæ brownish red; wings hyaline, nervures and stigma pale; areolet rather small, pentangular; abdomen compressed toward apex; two basal segments with sides of metathorax above pleuræ finely shagreened; rest of body polished; metathorax distinctly carinate, basal transverse carina wanting.

One specimen from Algonquin, Ill. (Dr. Nason). Type, coll. G. C. D.

Orthocentrus canadensis Prov., Faune Ent. Can. ii, 435.

♂.—3.5 mm. Black, with lower part of head, more or less of pro- and meso-thorax, tegulæ, antennæ beneath, apex of abdominal segments two and three and the legs pale yellow, sometimes varied with reddish yellow; abdomen with three basal segments aciculate, more or less rugose, rest subpolished; segments two and three with distinct oblique impressions as in *Glypta*.

Many specimens from Michigan, Illinois and Canada. Type, coll. Quebec Museum.

Orthocentrus trifasciatus Walsh, Trans. St. Louis Acad. iii, 100.

♂ ♀.—3-4 mm. Black, with lower part of head and scape beneath white; four anterior legs yellowish white; hind legs rufous with coxæ, femora and tips of tibiæ brown in ♂; abdominal segments 1-3 clay-yellow at apex; mesosternum rufous, and in ♂ most of the pleura also; wings subhyaline, veins and stigma brown, the latter paler, nearly triangular, twice as long as wide; areolet large, pentangular; metathorax with the usual elongate areas; abdomen finely and rather densely rugose, subpolished toward tip dorsal segment carinate.

Illinois, two males and one female. Type lost, and hence only provisionally placed in this genus.

Orthocentrus lucens Prov., Faune ii, 435.

♀.—3 mm. Black, with mouth, cheeks, tegulæ and anterior coxæ whitish; pleuræ, legs except apex of hind tibiæ, which are dusky, and apical margin of abdominal segment 3, ferruginous; wings hyaline, nervures and stigma brown, areolet large.

The type of this species is also probably lost, and hence cannot be placed, except provisionally.

STENOMACRUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Abdomen and metathorax polished; coxæ and femora brownish black.
intritus n. sp.

Abdomen at base and metathorax rugose.

Face piceous; apical half of second abdominal segment polished.
hastatus n. sp.

Face pale yellow; second abdominal segment entirely rugose.
stigmatias Walsh.

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Stenomacrus intritus n. sp.

♂.—2 mm. Black, with broad median stripe on face, mouth-parts, antennæ beneath, trochanters, four anterior tibiæ and tarsi and most of their coxæ and femora beneath, brownish yellow; antennæ above, coxæ, femora and tegulæ brownish black; wings hyaline, iridescent; nervures and stigma whitish, the latter small and with radius starting near the base; areolet wanting; the entire body is polished and without sculpture, except a few irregular fine wrinkles on basal segment of abdomen; metathorax depressed and with small, but distinct carinæ; abdomen depressed; antennæ long and with loosely connected segments.

One specimen from Canada (coll. U. S. Nat. Mus.).

Stenomacrus hastatus n. sp.

♀.—3 mm. Black, with two legs, mouth-parts, scape beneath and ovipositor, pale honey-yellow; face dark piceous; wings hyaline, nervures and stigma dirty white, the latter small, and with radius originating near the base; areolet wanting; body polished; metathorax rugosely shagreened and with large prominent carinæ; basal segment of abdomen irregularly rugosely reticulate with basal two-thirds tuberculate, behind which are rather broad, deep impressions; second segment less roughly rugose on basal half and abruptly met by a polished surface on apical half; thyridia are located much farther back than usual and close behind them are distinct depressions; rest of abdomen polished.

One specimen from Siskiyou County, Cala., and is in coll. U. S. Nat. Mus.

Stenomacrus? stigmatias Walsh (*Orthocentrus*), Tr. St. L. Acad. iii, 101.

♀.—4 mm. Black, with face, scape beneath, cheeks, mouth-parts, four anterior legs, and very narrow apical margins of first three abdominal segments, pale yellow; hind legs and antennæ dark rufous, latter more yellowish beneath; mesosternum rufous, sometimes black; wings hyaline, veins and stigma black, the latter "a little hunched on the costal margin and very strongly hunched on the side adjoining the discoido-cubital cell so as to describe a circular arc of 45°"; areolet with outer nervure visible only in certain lights: abdomen opaque, densely rugose, subpolished toward apex; basal segment convex, slightly concave on middle fourth.

Two females from Illinois. Types are probably lost. The description is taken from that given by Walsh, and is placed here as it agrees with this genus in the form of stigma.

CAMEROTOPS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Thorax black; basal segment of abdomen not aciculate.

Metanotum strongly shagreened and without distinct carinæ; abdomen strongly compressed.....**americanus** Ashm.

Metanotum polished and with prominent carinæ.

Third abdominal segment shagreened; abdomen scarcely compressed; most of head honey-yellow..... .....**asperus** n. sp

Third abdominal segment polished; abdomen compressed; face piceous. **premitus** n. sp.

Thorax mostly pale rufous or yellowish; two basal segments of abdomen finely and rather irregularly aciculate.....**ulmicola** Ashm.

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Camerotops americanus Ashm. (*Neuratelus*). Tr. A. E. S. xxiii. 203.

♀.—3 mm. Black, with basal portion of abdomen, antennæ and mouth-parts piceous; legs paler, with brownish portions; wings hyaline, nervures pale, areolet wanting; metathorax without distinct carinæ, and with basal segment of abdomen and base of second segment strongly shagreened and slightly aciculate; abdomen strongly compressed from apex of second segment.

One specimen from Maryland (coll. Ashmead).

Camerotops asperus n. sp.

♀.—3 mm. Black, with lower half of face, basal portion of antennæ beneath and legs, bright honey-yellow; middle portion of abdomen piceous to rufous, with second and third segments yellow at apex; palpi, tegulæ and venter white; antennæ piceous-brown; wings hyaline, nervures and stigma pale brown, areolet wanting; carinæ on metathorax distinct, the apical transverse one being very broad and shelving; abdomen compressed toward apex; three basal segments shagreened, opaquely so, basal segment with distinct carinæ.

One specimen from Algonquin, Ill. (Dr. Nason). Type, coll. G. C. D.

Camerotops premitus n. sp.

♂.—3 mm. Black, with transverse portion of face beneath antennæ, scape, base of antennæ beneath, apex of clypeus, mandibles and anterior coxæ and trochanters, brownish yellow; remainder of legs ferruginous; palpi and tegulæ white; face and antennæ reddish brown; wings hyaline, nervures and stigma pale brown; areolet wanting; metathorax polished and areolated, basal and middle areas united; carinæ distinct, basal segment of abdomen finely scabrous, carinate; second segment closely punctured, compressed on apical portion; remaining segments polished, strongly compressed.

One specimen from Michigan, taken July 18th, in woods. Type, coll. G. C. D.

Camerotops ulmicola Ashm. (*Neuratelus*), Tr. A. E. S. xxiii, 203. ♀.

Brephoctonus flavosus Ashm., ibid. 202, ♂.

Neuratelus liriodendri Ashm., ibid. 203. ♂ ♀.

♀.—2.5 mm. Vertex, occiput, metathorax and base and apex of abdomen black; rest of body varies from dark honey-yellow to piceous; legs and base of antennæ pale honey-yellow; palpi and tegulæ white; wings hyaline, nervures and stigma pale brown, areolet wanting; metathorax finely shagreened and with distinct carinæ; abdomen polished, strongly compressed on apical half; two basal segments finely and rather irregularly longitudinally aciculate.

♂.—Differs in being smaller, the abdomen not distinctly compressed, and in having the pale parts increased in proportions and pale yellow instead of reddish.

Four specimens from Columbus, Ohio; Washington, D. C.; and Jacksonville, Fla. Described from the types of the above species in coll. Ashmead.

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Tribe **EXTENTERINI.**

1. Teeth of mandibles of unequal length; lower one larger and longer.....2.
   Teeth of mandibles of equal length.....3.
2. Clypeus broadly truncate at apex; tarsal claws not or very weakly pectinate at base.....**Delotomus** Holmgr.
   Clypeus broadly rounded at apex; tarsal claws strongly pectinate to beyond the middle.....* **Anisoctinion** Foer
3. Tarsal claws pectinate.....4
   Tarsal claws not pectinate.....11.
4. Margin of segment 1 hollowed out three times.....**Tricamptus** Foer.
   Margin of segment 1 not hollowed out.....5.
5. Wings with an areolet.....6.
   Wings without an areolet.....* **Eridolius** Foer.
6. Hind tibiæ with a single small spur.....* **Microplectron** Foer.
   Hind tibiæ without a spur.....7.
7. Abdomen subpetiolate, basal segment distinctly broadened from the base toward the apex.....**Cteniscus** Curtis.
   Abdomen broadly sessile, basal segment is broadened immediately back of base and almost insensibly from that to the apex.....8.
8. Superior median area without a distinct boundary or entirely wanting. **Picroscopus** Foer.
   Superior median area distinctly bounded and as long, or longer than broad.9.
9. Metathorax oval, rarely spined; scutellum oval or flat; base of second abdominal segment with oblique grooves.....**Diaborus** Foer.
   Metathorax truncate posteriorly and spined at angles.....10.
10. Scutellum deeply and broadly excavated; posterior median area very large, wider than high; oblique grooves on second abdominal segment broad, rugose.....**Excavarus** Davis.
    Scutellum narrow, oval; posterior median area rectangular: oblique grooves scarcely indicated.....**Anderis** Davis.
11. Segment 1 broadened ear-like at base.....12.
    Segment not broadened, ear-like at base.....**Anecphysis** Foer.
12. Segment 2 at apex twice as broad as 1 at apex.....**Exyston** Schiödte.
    Segment 2 at apex scarcely once and a half as broad as 1 at apex. * **Actenonyx** Foer.

DELOTOMUS Holmgren.

(Monographia Tryphonidum Sueciæ, p. 222, 1856.)

Acrotomus is a synonym.

Delotomus rufus Prov. (*Cteniscus*), Faune Ent. Can. ii, 423.

♀.—4 mm. Rufous; head, except face and mouth, and thorax surrounding scutellum, black: apex of abdomen dusky; trochanters and four anterior coxæ yellow; antennæ long, dusky brown, reddish at base and apex; wings hyaline, nervures and stigma brown; areolet triangular, sessile, oblique; abdomen subsessile, slender at base; basal segment broadened toward apex and with median groove.

(Taken from Provancher's description). One specimen.

The lower tooth of mandibles is considerably longer and larger than the upper one. Type, coll. Quebec Museum.

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CTENISCUS Curtis.

(British Entomology, 1823, p. 40.)

G. *Exenterus* Hartig, Wieg. Archiv. f. Naturig. Jahrg. 3, 1837.

This separation from the other species of what was the old genus by the above name is a natural one. The individuals of the species composing the genus as it now is are smaller, more delicate, highly polished, rarely rugose, or even coarsely punctured. The petiole is very narrow at the base and widens quite evenly, and in ♀ very rapidly, to the much widened apex.

Thorax black, or with yellow markings.

Scutellums black; hind coxæ usually black; face above clypeus black in ♀; abdomen nearly black in ♂ ..... **clypeatus** Cress.

Scutellums more or less yellow; face yellow; abdomen mostly rufous.

Posterior coxæ rufous or piceous ..... **consors** Cress.

Posterior coxæ lemon-yellow ..... **flavicoxæ** Cress.

Thorax, abdomen and legs pale rufous ..... **orbitalis** Cress.

Cteniscus clypeatus Cress., Trans. Am. Ent. Soc. ii, 113.

♀.—6 mm. Head and thorax black, with clypeus, mandibles, palpi, tegulæ and spot in front pale yellow; abdomen varies from entirely black, except narrow reddish apical margins of segments, to black at base and apex and usually lateral margins, with the central portion of the abdomen rufous; apex of segments 6-8 usually narrowly margined with yellow; legs usually pale rufous with yellowish trochanters and anterior coxæ, but in the darker specimens the four anterior coxæ and trochanters and hind legs become dusky with the posterior coxæ black; wings fusco-hyaline, nervures and stigma brown, the latter being thick, and deep from the margin to the origin of the marginal nervure; antennæ dusky rufous; face, metathorax and abdomen closely punctured; areas of metathorax distinct; carinæ on basal segment of abdomen distinct to beyond the middle of the segment; abdomen broad, narrowed at apex.

♂.—Differs by being longer, more slender; with carinæ extending to the apex of first segment of abdomen and with face and abdomen polished. In color the males average darker than the females; the abdomen is mostly black, the second and third segments having rufous spots on apical median portion and the rufous portion may broaden, and elongate onto the fourth and fifth segments; four anterior legs, posterior trochanters, face, mouth-parts and cheeks beneath pale yellow; posterior legs dusky with coxæ and femora darkest.

Four females and six males from Mt. Hood, Oregon; Colorado, "Hudson Bay Territory" and Mt. Washington, New Hampshire (Mrs. Slosson). Type, coll. Am. Ent. Soc.

Cteniscus consors Cress., Trans. Am. Ent. Soc. ii, 113.

♀.—6 mm. Head and thorax black; face, except median black line, mouth-parts, cheeks beneath, more or less of a large orbital spot above eyes connected in front by a narrow orbital line, more or less of scutellums, tegulæ, spot in front, more or less elongate on humeral suture, stripe above anterior coxæ, four anterior coxæ and trochanters, lemon-yellow; remainder of legs ferruginous, posterior tibiæ sometimes dusky at base and apex; abdomen rufous with first segment,

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except tip, and basal portion of second black, sometimes the apex or lateral margins are blackish; antennæ fulvous, blackish toward base above; wings subhyaline, nervures and stigma brown, pale at base; stigma large, thick, triangular; entire body polished, with metathorax and basal segment of abdomen somewhat rugose; mesopleuræ mostly punctured and with a deep indenture on the posterior median portion; abdomen broad, pointed at apex.

Seven specimens from New Hampshire, Connecticut, Toronto, Canada; Texas and Nevada. Type, coll. Am. Ent. Soc.

Cteniscus flavicoxæ Cress., Proc. Ent. Soc. iii, 283.

♀.—5 mm. Head and thorax black, with face, except short median line beneath antennæ, mouth-parts, scape beneath, anterior orbits, cheeks, pectus tegulæ, spot in front, apex of scutellum, four anterior legs and posterior coxæ and trochanters whitish yellow; antennæ dusky brown, fulvous at tip; abdomen ferruginous with basal segment black and lateral margins of segments 2-5 dusky; posterior legs, beyond trochanter, pale ferruginous, tibiæ slightly dusky; wings hyaline, nervures reddish brown, stigma large, brown, pale at base; body is shining, sparsely punctured; abdomen broad, depressed at base, subcompressed at apex; metathorax rugulose, polished at base, carinæ distinct.

♂.—Differs from ♀ in having the abdomen only moderately broad, oval, not compressed toward apex; all the prothorax, most of mesosternum and lower mesopleuræ, stripes along parapsidal grooves, scutellums, median tip of first abdominal and apical dorsal portion of second segment whitish yellow; the abdomen is black at base of second segment but lacks the dusky lateral border.

Two females and two males from Canada, Delaware, Massachusetts and Illinois. Type, coll. Am. Ent. Soc.

Cteniscus orbitalis Cress., Proc. Ent. Soc. iii, 283.

♀.—6 mm. Head black, with face, mouth-parts, cheeks behind eyes and anterior orbital lines white; antennæ reddish brown, paler on apical portion; thorax and abdomen ferruginous; tegulæ and scutellums white; prothorax somewhat pallid; legs ferruginous with four anterior coxæ and all the trochanters whitish; wings hyaline, nervures and stigma brown, whitish at base; abdomen polished, petiole longitudinally aciculate; metathorax subpolished, carinæ plain, apical median area indistinctly transversely rugose.

Two specimens from Canada and Pennsylvania. Type, coll. Am. Ent. Soc.

PICROSCOPUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

In our own species of this genus, the carinæ on the metathorax are small and partly or entirely absent; scutellum broad and flat; body coarsely and deeply punctured as in *Metopius*.

Two basal segments of abdomen rugose or scabrous.....**canadensis** Prov.
Two basal segments deeply punctured, not rugose; oblique grooves present at base of second segment.....**hullensis** Prov.

Picroscopus canadensis Prov. (*Exenterus*), Faune ii, 796.

♂ ♀.—9 mm. Black, with orbital lines except above the eyes, face except median line, scape beneath, mouth-parts, tegulæ, line beneath, line on lateral

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margins of mesonotum, scutellums, line on collar, spot on anterior mesopleuræ, spot on lateral apical corners of metathorax, apical margins of abdominal segments, broadest on first and narrowing to the fifth, where they terminate, lemon-yellow; legs reddish yellow, with coxæ and apex of posterior tibiæ black; posterior part of four anterior femora and all of posterior femora piceous; wings subhyaline, nervures and stigma brown; antennæ dark brown; body coarsely punctured; metathorax and two basal segments of abdomen scabrous.

Canada (type in Quebec Museum).

Pleroscopus hullensis Prov. (*Exenterus*), Add. Faune, 104.

♂.—6 mm. Black, with anterior orbits, nearly wanting beneath antennæ, clypeus, mouth-parts, orbital line beneath, scape beneath, collar, spot beneath tegulæ, triangular spot on margins of mesonotum, scutellums, large irregular spot on outer apical corners of metathorax, apical margin of all abdominal segments, much broader on basal one, four anterior legs, except black spot on outer middle femora, posterior trochanters and tibiæ and tarsi except apex, yellow; wings hyaline, nervures and stigma yellowish at base; abdomen deeply punctured on two basal segments; petiole with carinæ uniting near the apex; second segment with distinct oblique grooves; next two segments constricted at base; gastroceli large, yellowish.

Described from type specimen, which is in the coll. of W. H. Harrington.

DIABORUS Foerster.

(Synop. der Fam. und Gatt. der Ichneumonen, 1868.)

Thorax mostly or entirely black.

Abdomen black with median yellow apical spots.

Posterior coxæ and face black.....**maculiventris** Ashm.

Posterior coxæ and legs ferruginous; face yellow.

Scutellum yellow; wings subhyaline; oblique grooves narrow on second abdominal segment.....**similis** n. sp.

Scutellum with tip yellow; wings hyaline; oblique grooves shallow.

ignipes n. sp.

Posterior coxæ and face yellow; posterior tibiæ dusky with a more or less distinct pale annulus; scutellum, except tip, black.**mediatus** Cress.

Abdomen black with both median spots and apical lines on margin of abdominal segments; scutellum and posterior coxæ yellow.

nebraskensis n. sp.

Abdomen mostly rufous; thorax black; legs rufous.....**ornatus** Walsh.

Thorax entirely rufous with yellow markings.

Head color of thorax; cubito-discoidal vein gently curved, not broken, and without stump of vein.....**dorsalis** Cress.

Head black; cubito-discoidal vein broken and with a short stump.

nigrocephalus n. sp.

Diaborus maculiventris Ashm., Trans. Am. Ent. Soc. xxiii, 197.

♂ ♀.—5-7.5 mm. Black, with anterior orbital lines, clypeus, mouth-parts, cheeks beneath, tegulæ, line in front, anterior coxæ generally, four anterior trochanters and median spots more or less merged into narrow apical lines on the apical portion of the abdominal segments yellow; antennæ dark brown; posterior coxæ and trochanters and middle coxæ black; remainder of four anterior

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legs ferruginous and hind legs rufous; wings fusco-hyaline, nervures and stigma reddish brown; head and thorax closely punctured and pilose: parapsidal grooves distinct; scutellum oval, flat above; abdomen rather slender, oval, pilose; coarsely punctured on two basal segments, finely punctured on the remaining ones; basal segment carinate, second segment with oblique grooves at the base, third segment with the grooves somewhat indicated.

Four females and three males from New Hampshire (Mt. Washington, Mrs. Slosson). Type, coll. Ashmead.

Diaborus similis n. sp.

♀ and ♂ (?). –7 mm. Black, with face, anterior orbital lines, scape beneath, mouth-parts, cheeks, tegulæ, line in front, small line beneath, scutellums, pectus, spot on sternum, line above anterior coxæ and one posterior to this on mesopleura, four anterior coxæ, all of trochanters, venter and large semicircular spots on median apical portion of abdominal segments, pale yellow; remainder of legs rufous with posterior tarsi, and perhaps tibiæ, brownish; wings subhyaline, nervures and stigma brown, whitish at base; head and thorax polished, scarcely punctured, the sternum and metathorax excepted; clypeus separated by a deep groove, parapsidal grooves distinct on anterior portion, the median lobe somewhat prominent; scutellum polished, broad, flat above; abdomen longitudinally rugulose and carinate on basal segment; second and third segments coarsely punctured at base and the second with narrow oblique grooves; remainder polished and finely punctured.

Two specimens from Colorado and Montana. Types, coll. Amer. Ent. Soc. and G. C. D.

Diaborus ignipes n. sp.

♀ ♂.—7 mm. Black, with face, except short triangular portion beneath antennæ, anterior orbital lines, scape beneath, mouth-parts, cheeks, pectus, anterior trochanters and coxæ, line above, small stripe on anterior mesopleura, tegulæ, line in front, postscutellum, apex of scutellum, venter, lateral margins of apical abdominal segments and median dorsal spots on apical portion of each segment becoming transversely oblong toward the apex, yellow; legs, except anterior coxæ and trochanters, uniform rufous; wings hyaline, stigma and veins pale, yellowish; antennæ reddish brown; head and thorax, including mesopleura, pilose and rather coarsely and closely punctured; metathorax and basal segment of abdomen rugulose, carinate; second segment very closely punctured and with oblique basal grooves; remaining segments polished, finely punctured.

One female and three males from New Hampshire and Canada. Types, coll. G. C. D. and Amer. Ent. Soc.

Diaborus mediatus Cress. (*Cteniscus*), Proc. Ent. Soc. iii, 282.

♀ ♂.—4-5 mm. Black, with face, anterior orbital lines, scape beneath, mouth-parts, cheeks, tegulæ, line in front, tip of scutellum, pectus, all coxæ and trochanters, most of venter and median apical spots on abdominal segments, yellow; antennæ brown, reddish beneath; wings hyaline, nervures and stigma reddish brown; head, thorax and abdomen polished, sparsely punctured and finely pilose metathorax, first and base of second abdominal segments closely punctured, rest of abdomen polished; carinæ on first segment and oblique grooves at the base of second segment.

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One male and female from Illinois, Canada (Cresson) and South Haven, Mich. Type, coll. Amer. Ent. Soc.

Diaborus nebraskensis n. sp.

♂.—7.5 mm. Black, with yellow markings as follows: face, anterior orbital lines, enlarged above the eyes, scape beneath, mouth-parts, cheeks behind eyes, prothorax, tegulæ, line on lateral mesonotum, recurved along parapsidal grooves, scutellums, lower half and anterior portion of mesopleura, longitudinal stripes on mesonotum; metathorax entirely, except basal suture and most of the two median apical areas, all coxæ and trochanters, carinæ on basal abdominal segment, broadening laterally toward apex, apical third of all following segments and a large median spot extending nearly to the base on segments 2-4; antennæ reddish brown, blackish at base above; wings hyaline, nervures and stigma brown, pale at base; head and thorax polished, finely and sparsely punctured; lower mesopleura and metathorax more closely punctured; second lateral area of metathorax and basal segment of abdomen, aciculate; second segment polished, punctured at base and with broad oblique grooves; the tarsal claws are long and pectinate only at base.

One specimen from Nebraska. Type, coll. Amer. Ent. Soc.

Diaborus ornatus Walsh (*Exenteron*), Trans. St. Louis, Acad. iii. 105.

♂.—6 mm. Head and thorax black, with face, scape beneath, mouth-parts, cheeks, tegulæ, line in front, more or less of pectus, sternum and scutellums, four anterior coxæ and all trochanters, yellowish white; remainder of legs pale rufous; antennæ dusky, rufous toward apex; abdomen rufous, more or less dusky at apex, and with apex of segments often margined with yellow; basal segment black with median apical rufous spot; wings hyaline, veins and stigma brown, whitish at base; cubito-discoidal vein not broken; metathorax oval, not spinose; basal segment of abdomen carinate, rugulose; second segment with oblique basal grooves. This is probably the ♂ of *D. dorsalis*.

Four males from New Hampshire, Illinois (Walsh). Type, ?

Diaborus dorsalis Cress. (*Cteniscus*), Proc. Ent. Soc. Phil. iii, 282.

♀.—6 mm. Rufous, with face, mouth-parts, cheeks, scape beneath, tegulæ, line in front, pectus, tip of scutellum and median apical spots on abdominal segments yellow; legs rufous, with trochanters and four anterior coxæ, yellowish; wings hyaline, nervures and stigma yellowish brown; cubito-discoidal nervure gently curved, not broken and without stump of a vein; first abdominal segment finely and closely punctured, carinæ weak; base of second segment punctured and with oblique grooves; metathorax oval, areolated, subpolished.

Two specimens from Illinois (type, coll. Amer. Ent. Soc.).

Diaborus nigrocephalus n. sp.

♀.—6 mm. Ferruginous, with head black; face, mouth-parts, cheeks beneath and tegulæ reddish yellow; wing hyaline with nervures and stigma dark brown, paler at base; cubito-discoidal nervure broken and with a short stump; metathorax areolated, polished; abdomen polished, with first and base of second segment closely and finely punctured; carinæ on basal segment weak; oblique grooves at base of second segment deep and narrow.

One specimen from Georgia (type, coll. Amer. Ent. Soc.).

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EXCAVARUS n. gen.

Characterized by having the scutellum deeply and broadly excavated above, so that it apparently is surrounded by a high carina; metathorax truncate posteriorly and with the posterior median area very large, broader than high and with strong spines at the lateral apices; oblique grooves at base of second segment are broad and made rugose by transverse ridges crossing them.

The two species may be separated by:

Posterior tibiæ with yellowish white annuli ..... **annulipes** Cress.
Posterior tibiæ dusky, without annulus ..... **vitticollis** Cress.

Excavarus annulipes Cress. (*Cteniscus*), Trans. Amer. Ent. Soc. ii, 112.

♂.—9-11 mm. Black, with face, anterior orbits, mouth-parts, cheeks beneath, tegulæ, line in front and beneath, apex of scutellum, postscutellum and capillary lines each side of them and apical margins of abdominal segments beginning with the second, the margins becoming broader toward apex, yellow; meso- and metasternum and lower half of their pleuræ rufous; pectus, four anterior legs and posterior coxæ ferruginous, basal part of trochanters and the femora of hind legs piceous, the latter sometimes rufous in the middle; posterior tibiæ yellow, rufous beneath and with a black annulus near the base and broader one at the apex; tarsi black, yellow on basal half of the heel segment; antennæ reddish brown, piceous at base; wings hyaline, nervures and stigma brown; front coarsely punctured and swollen in the center: clypeus separated by a deep groove; pleura polished without puncture: mesonotum sparsely punctured; scutellums truncate behind; metathorax rugose, the two longitudinal carinæ prominent, apical median area transversely aciculate and divided by a vertical carina; first and basal half of the second abdominal segment scabrous, carinæ prominent; remainder of the abdomen finely punctured.

Two specimens from Massachusetts and N. Illinois (Dr. Nason) (type, coll. Amer. Ent. Soc.).

Excavarus vitticollis Cress. (*Cteniscus*), Trans. Amer. Ent. Soc. ii, 113.

♂ (?).—8 mm. Black, with face, anterior orbits, cheeks beneath, mouth-parts, parallel lines on mesonotum, tegulæ, line in front, line beneath, scutellums, pectus, sternum and lower pleuræ, four anterior coxæ and trochanters, venter, with lateral margin of segments near apex and median spots at apex of the abdominal segments, white: legs and metasternum pale rufous; posterior tibiæ and tarsi blackish; antennæ fulvous, brown at base: wings hyaline, nervures and stigma brown, pale at base; metathorax and most of second abdominal segment closely punctured; basal segment rugulose, indistinctly longitudinally aciculate, carinæ small.

Type specimen from Massachusetts (coll. Amer. Ent. Soc.).

ANDERIS n. gen.

Characterized by having the abdomen slender, cylindrical, subclavate and without the oblique grooves being present at base of second segment, or at least not more than slightly indicated; the

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posterior median area is nearly square, not broad, and with spines at the sides; scutellum narrow, oval.

Scutellum and most of mesothorax rufous.....**californicus** Cress.
Scutellum black, yellowish at tip; thorax black, with yellow markings.
albilineatus Walsh.

Anderis californicus Cress. (*Cteniscus*). Proc. Ac. Nat. Sci. Phil. 1878, 374.

♂.—6 mm. Black, with mesopleura, sternum, two lateral stripes on notum, lateral spots on metanotum, posterior coxæ and femora rufous; face, mouth-parts, cheeks, scape beneath, pectus, line above, line on anterior mesopleura, tegulæ, spot in front, line beneath, capillary line extending from hind wings back of scutellum, postscutellum, apical margins of second and following segments of abdomen four anterior coxæ and all trochanters, white; wings hyaline, nervures and stigma brown; antennæ black, yellowish beneath; head and thorax polished, punctured; metathorax scabrous, with broad apex and rough tuberculate angles; abdomen finely punctured, polished; two basal segments closely punctured, second segment without distinct oblique grooves, basal segment with strong carinæ.

Type only, from California (coll. Amer. Ent. Soc.).

Anderis albilineatus Walsh (*Cteniscus*). Trans. St. Louis Acad. iii, 107.
Cteniscus apicatus Prov., Faune Ent. Can. ii, 421, ♂.

♀ ♂.—6–8 mm. Black, with face, cheeks, mouth-parts, scape beneath, tegulæ, line beneath, spot in front, pectus, anterior mesosternum with the line extending onto anterior pleura, four anterior coxæ and trochanters, apical part of posterior trochanter and apical margins of the second and following abdominal segments white; scutellums varies from entirely black to almost entirely white; the four anterior legs pale rufous; posterior tibiæ and tarsi black, femora black to piceous, or sometimes subrufous, coxæ rufous in ♀, black, or with white spot above in ♂; basal trochanter black or blackish; wings hyaline, nervures and stigma brown, pale at base; metathorax truncate and with strong carinæ, which terminate at the angles in prominent spines; basal segment of abdomen with carinate lateral margins and median carinæ; segment one and basal portion of two and three closely and roughly punctured; claws sparsely pectinate.

One female and five males, from Colorado, Illinois, Michigan and Canada.

ANECPHYSIS Foerster.

(Synopsis d. Familien und Gattungen d. Ichneumonen, 1868.)

Foerster characterizes this genus by lacking the ear-like projections at the base of the petiole as found in *Exyston*. The representative of this genus before me also differs from *Exyston* by having the petiole as broad at base as at apex and with the third abdominal segment broad and depressed so that the second segment broadens very rapidly.

Anecphysis curvineura n. sp.

♀ ♂.—7 mm. Black, with face, orbital lines at side of antennæ, mouth-parts, tegulæ, line beneath, scutellums, four anterior coxæ, all trochanters, apex of posterior femora, base and annulus in middle of posterior tibiæ, spot on central

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tip of petiole, spot on either side at base of second segment and apical fifth of the second and following segments, broadest in the middle, lemon-yellow; posterior coxæ black; remainder of hind legs, except the yellow portions, and all femora reddish piceous; four anterior tibiæ and tarsi brownish yellow; wings hyaline, nervures and stigma reddish brown; third discoidal cell narrow, the vein above arched, not broken and without stump of vein; antennæ black, piceous at apex; thorax and abdomen polished, finely punctured; metathorax areolated as in *Exyston*; areas rugose, apical median one distinctly transversely rugose; petiole carinate, coarsely punctured, slightly arched; second segment punctured, and much broader at base than petiole is at apex, rapidly and evenly broadening toward apex, third and fourth segments nearly equal in breadth; fourth and fifth narrowing and oval.

One male specimen from New York (coll. Amer. Ent. Soc.); female, N. Illinois (coll. U. S. Nat. Mus.).

EXYSTON Schiödte.

(Ichneumonidarum ad Faunam Daniæ, p. 12. not., 1839.)

The principal characters of the genus are: mandibles with teeth of equal length, clypeus separated by a groove; thorax globular, pilose; metathorax completely areolated, the basal areas polished, not punctured; tarsal claws not pectinate; wings with an areolet; abdomen clavate, pilose; petiole long, slender and hairy, with spiracles in the middle and an ear-like enlargement at the base.

Species as follows:

Abdomen black with yellow apical margins of segments.
  Posterior femora and coxæ black and yellow.
    Abdominal segments narrowly yellow at apex.....**nigreo** n. sp.
    Abdominal segments broadly yellow.....**marginatum** Prov.
  Posterior legs entirely lemon-yellow; thorax and abdomen largely yellow; metathoracic areas, except third median, polished, and with weak carinæ.....**excelsus** Cress.
  Posterior femora, tibiæ and tarsi ferruginous; thorax and abdomen largely yellow; metathoracic areas separated by strong carinæ.
flavens n. sp.
Abdomen more or less rufous.
  Thorax black, with yellow or rufous markings.
    Scutellums black; abdomen and hind legs mostly black; face with broad central black stripe above clypeus.....**nigroscutum** n. sp.
    Scutellums yellow only at tip; abdomen blackish at apex; posterior coxæ black or blackish.
      Hind femora black or piceous; abdomen black, except segment 3; apical margins of segments narrowly yellow.....**speciosus** n. sp.
      Hind femora and tibiæ rufous, narrowly black at base and apex; abdomen mostly rufous.

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Apical segments of abdomen mostly yellow; abdomen strongly clavate. **boreotis** n. sp.

Apical segments of abdomen narrowly margined with yellow, or entirely without yellow margins.

Face entirely yellow; third discoidal cell broad, the vein above usually broken and with a distinct stump ..... **clavatus** Cress.

Face mostly black above clypeus; third discoidal cell scarcely broadened, vein not broken; postero-median area of metathorax with median carina usually ..... **contracta** n. sp.

Scutellums entirely yellow.

Posterior coxæ entirely yellow, or in part black.

Humeral cross-vein of hind wing broken in or below the middle; hind femora and abdomen dusky; metapleura punctured. **articularis** n. sp.

Humeral cross-vein of hind wing broken much above the middle; femora rufous; abdomen rufous, black at base; metapleura perpendicularly rugose ..... **humeralis** n. sp.

Posterior coxæ rufous; abdomen black at base, sometimes dusky at apex; posterior femora and tibiæ entirely rufous or dusky at base and apex.

Head black, or black and yellow behind eyes; thorax usually black. **abdominalis** Cress.

Head rufous behind eyes; thorax more or less rufous.. **rufinus** n. var.

Thorax, abdomen and head rufous, or with yellow markings.

Petiole of abdomen carinate, wings hyaline ..... **varietus** Prov.

Petiole oval, polished and without carinæ.

Wings smoky, body mostly rufous ..... **venustus** Cress.

Wings hyaline; body mostly pale yellow ..... **politus** n. sp.

Exyston nigreo n. sp.

♂.—7 mm. Black, pilose, with the following parts lemon-yellow: face, orbital lines each side of antennæ, mouth-parts, tegulæ, scutellums, narrow apical margins on abdominal segments, four anterior coxæ, all the trochanters, apex of femora, front part of four anterior femora, four anterior tibiæ, small annulus at base and broad annulus in middle of hind tibiæ; tarsi more or less dusky, posterior pair almost black; antennæ reddish brown, scape black; wings fusco-hyaline; veins and stigma dark brown; cubito-discoidal vein broken, humeral cross-vein of hind wing broken in the middle; scutellum rounded; petiole of abdomen broad, strongly carinate, spiracles not prominent.

Two specimens from Colorado and Seattle, Wash., Prof. O. B. Johnson (type, coll. G. C. D. and Amer. Ent. Soc.).

Exyston marginatum Prov., Add. Faune Hym., 99.

♀.—7 mm. Black, with face, tegulæ, scutellums, spot on scape beneath, broad apical margin of abdominal segments, legs, except base and apex of posterior tibiæ and femora, which are black; femora slightly reddish; wings hyaline, nervures brown.

Provancher's type of this species not seen. The description given here is condensed from his own. The type is from Toronto, Canada, but is not in the Quebec Museum.

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Exyston excelsus Cress. (*Ctenioscus*), Proc. Ent. Soc. Phil., iv, 262.

♀.—8 mm. Black, with face, mouth-parts, cheeks, anterior orbital lines, scape beneath, tegulæ, line above and below, suture in front of it, the upper one recurving and reaching nearly to scutellum, anterior half of mesosternum, prosternum, patch back of it, scutellums, broad band across metathorax at base, apical half of abdominal segments and all of legs, except sometimes the inner portion of the femora and tibiæ near base and at apex, which are black, lemon-yellow; antennæ reddish brown, paler at apex and beneath; wings hyaline, veins brown, stigma semi-transparent, costal margin yellow: scutellum elevated and with a transverse central ridge; petiole broad, spiracles distinct.

♂.—Differs in having the black encroach on the yellow on the head and abdomen somewhat, and in the thorax having besides the tegulæ and scutellums yellow, a line beneath tegulæ and an oblong spot on anterior mesopleura.

Five females and one male from Colorado, Montana and So. California (type, coll. Amer. Ent. Soc.).

Exyston flaveus n. sp.

♀.—6 mm. Black, with yellow markings extending still farther around the eyes than in *excelsus*, with markings on thorax the same except those on mesonotum nearly wanting, and the band on metanotum narrow and irregular in outline, with abdominal segments at apex entirely yellow, but on the first three, not half yellow; four anterior legs, posterior trochanters and upper and lower portions of posterior coxæ, yellow; remainder of hind legs, except coxæ black at base, are a clear rufous; wings clear, hyaline; nervures and stigma color of posterior femora; scutellum somewhat elevated; third median cell of metathorax strongly transversely reticulated.

One specimen from Texas (type, coll. Amer. Ent Soc.).

Exyston nigroscutum n. sp.

♂.—8 mm. Black, with clypeus, mandibles except teeth, palpi, trapezoidal orbital spots above clypeus and separated from it by a dark sutural line, tegulæ and trochanters yellow; four anterior legs, except coxæ and base of femora which are black, and apical margins of abdominal segments two and the following yellowish ferruginous; third segment, except broad, lateral, black stripes, and annulus at base and middle of posterior tibiæ rufous; antennæ reddish brown; wings fuscous; nervures and stigma brown; third discoidal cell twice as broad in the middle as at base; the vein above broken and with stump, humeral cross-vein of hind wing broken above middle; third median area of metathorax transversely rugose, while those above it are longitudinally rugose; petiole scarcely broadened behind; spiracles not prominent; body rather coarsely punctured, pilose.

One specimen from Colorado (type, coll. Amer. Ent. Soc.).

Exyston speciosus n. sp.

♀.—6-7 mm. Black, with lower three-fourths of face, mouth-parts, except teeth and base of mandibles, tegulæ, tips of scutellums, four anterior coxæ, all trochanters and narrow margin on apical segments yellow; anterior legs and apex of segments 2 and 3 and base of segment 3 of abdomen rufous; posterior tibiæ and tarsi piceous, the former slightly paler in the middle; antennæ black, reddish toward apex beneath; wings fusco-hyaline, nervures and stigma reddish

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brown; cubito-discoidal vein not broken; mesothorax finely punctured, scutellum coarsely punctured; metathorax shining at base, and on pleura, except above hind coxæ where it is coarsely punctured; apex of metathorax scabrous; abdomen slender, shining, finely punctured; basal half of second segment coarsely punctured; petiole slightly broadened toward apex, carinate; spiracles not raised.

Two specimens from Washington and Colorado (type, coll. Amer. Ent. Soc. and G. C. D.).

Exyston boreotis n. sp.

♀ ♂.—8 mm. Black, with face, mouth-parts, cheeks beneath, orbital lines each side of antennæ, tegulæ, prosternum, apex of scutellums, four anterior coxæ, all trochanters and apical margins of abdominal segments 3 and following, narrow on 3 and 4, half of 5 and most of 6 and 7, yellow; femora rufous, posterior pair and tibiæ black at base and apex; posterior tarsi dusky, remainder of four anterior legs ferruginous; antennæ rufous, dark at base; abdomen more or less rufous on segments 2-4; wings hyaline, nervures and stigma reddish brown; cubito-discoidal vein broken; face, scutellum and metathorax at apex, coarsely punctured; pleuræ shining, punctured; abdomen clavate, pilose, finely punctured; petiole broad, carinate; ovipositor of ♀ exserted, 1 mm. long.

Male from Colorado, female from "Hudson Bay Territory" (types, coll. Amer. Ent. Soc. and G. C. D.).

Exyston clavatus Cress. (*Cteniscus*), Proc. Acad. Nat. Sci. Phila. iii, 284.
E. abdominalis Ashm., Trans. Amer. Ent. Soc. xxiii, 197.

♂.—7-9 mm. Head and thorax black, with face, mouth-parts, tegulæ and apex of scutellums yellow; antennæ fulvous black at base; abdomen rufous, black on segment 1 and at base of 2, also usually black at base of apical segments; apical margins of segment 3 and the following usually are narrowly margined with yellow at apex; wings subfuscous, nervures and stigma reddish or yellowish brown; third discoidal cell broad, the cubito-discoidal vein broken above; four anterior legs fulvous with coxæ and trochanters yellow; posterior coxæ black, trochanters yellow, femora and tibiæ rufous with black annuli at base and apex, tarsi blackish; body finely punctured; metathorax with apical portion rugulose; metapleura smooth, punctured.

Eight specimens from Michigan, Massachusetts, New Jersey, Delaware and Connecticut (type, coll. Amer. Ent. Soc.).

Exyston contracta n. sp.

♂.—7 mm. Head and thorax black, with triangular orbital lines on lower face, clypeus, mandibles, palpi, tegulæ and apex of scutellums yellow; legs as in the preceding species, except that the black markings on hind femora and tibiæ are more indistinct; abdomen black, with segments 2-4 rufous, apex of segments 3 and the following narrowly yellow; petiole rather broad, carinate; body polished, finely punctured; apical portion of metathorax rugose, which are obscurely transverse on the third median area; metapleura smooth, punctured, except above coxæ, where it is vertically aciculate; wings subhyaline, nervures and stigma brown; third discoidal cell narrow owing to the vein above not being but little arched.

Three specimens from Nevada and Washington (type, coll. Am. Ent. Soc. and G. C. D.).

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Exyston articulatus n. sp.

♂.—7-10 mm. Black, with face, mouth-parts, anterior part of cheeks, orbital lines each side of antennæ, scape beneath, tegulæ, line beneath, scutellums, four anterior legs, posterior coxæ and trochanters and apical margins of terminal segments of abdomen lemon-yellow; posterior femora black at base, reddish at apex; tibiæ yellowish, with a black annulus near base; tarsi dusky; abdomen piceous, black at base and segments 3 and 4 and apex of 2 more or less rufous; wings subhyaline, nervures and stigma brown, yellowish at base; cubito-discoidal vein strongly curved, but not broken; humeral cross-vein of hind wing broken in or below the middle; third median area transversely rugose; basal areas shining and separated by high carinæ; lateral areas punctured; abdomen shining, carinæ on petiole prominent; spiracles not raised.

♀, which is in the coll. U. S. Nat. Mus., has the abdomen nearly all yellow on apical portion and the abdomen and legs are more rufous.

Three males from Montana and Brookings, S. Dak., Prof. Aldrich; female from Colorado, Prof. Gillette (types, coll. G. C. D. and Am. Ent. Soc.).

Exyston humeralis n. sp.

♂.—9 mm. Black, abdomen ferruginous beyond the middle of second segment; face, anterior orbital lines, scape beneath, mouth-parts except teeth, anterior part of cheeks, tegulæ, line beneath, scutellums, sutural line above anterior coxæ, four anterior legs, posterior coxæ and trochanters and apical margins of abdominal segments 3-6, yellow; antennæ fulvous, dusky at base above; wings hyaline, nervures and stigma brown; cubito-discoidal vein broken and with stump; humeral cross-vein of hind wing broken much above the middle; third median area of metathorax and lateral areas adjoining, irregularly rugose; metapleura perpendicularly rugose; abdomen shining; carinæ on petiole prominent; spiracles slightly enlarged.

One specimen from Canada (type, coll. Amer. Ent. Soc.).

Exyston abdominalis Cress. (*Ctenioscus*), Proc. Ent. Soc. Phil. iv, 264.

♀ ♂.—6-9 mm. Black; face, scape beneath, mouth-parts lower portion of cheeks, tegulæ, scutellums, prosternum, sometimes entire prothorax and spots on mesopleuræ, four anterior coxæ and all of trochanters, lemon-yellow; anterior legs reddish yellow; posterior coxæ rufous, femora and tibiæ rufous or narrowly black at base and apex, tarsi usually dusky; extreme base of posterior tibiæ sometimes marked with yellow; abdomen black, at least on basal half of petiole, usually mostly rufous, apex sometimes dusky and sometimes almost entirely yellow in ♀; antennæ reddish brown, black at base above; wings hyaline, nervures and stigma brown; thorax polished, sparsely punctured, metapleura punctured, apical median area of metathorax irregularly or transversely rugulose.

Six females and four males from Colorado, Montana, Nevada, Michigan, Illinois, New Hampshire and Massachusetts (type, coll. Amer. Ent. Soc.).

Var. **rufinus** n. var.—Differs from *abdominalis* by having the head behind the eyes rufous, in having a broad transverse band on metathorax, prothorax in front of tegulæ and more or less of mesopleuræ, rufous; abdomen not black at apex.

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Four females and two males from New Hampshire, New York and Massachusetts (types, coll. Amer. Ent. Soc. and G. C. D.).

Exyston variatus Prov., Faune Ent. Can. ii, 407.

♀ ♂.—7-8 mm. Honey-yellow to rufous, with spot enclosing ocelli and sutures around scutellum, and sometimes most of sternum, lower half of pleura, part of posterior coxæ and all of prothorax, black; legs, with coxæ and trochanters, yellowish; posterior legs color of body; face, orbital lines in front, scutellums and prosternum pale yellow; antennæ rufous, dusky at base above; wings hyaline, nervures and stigma brown; thorax polished; apical portion of metathorax coarsely punctured, petiole of abdomen strongly carinate, with that and the following segments polished.

Five males and four females from Michigan, So. Dakota, Colorado, New Jersey, Canada, New Hampshire and New York.

Exystus venustus Cress. (*Cteniscus*), Proc. Ent. Soc. Phil. iv, 263.

♀.—10 mm. Transparent rufous with face, anterior orbits, mouth-parts, tegulæ, spot beneath, anterior part of mesosternum, prosternum, apical portion of scutellums, most of legs, apex of third abdominal segment, apical third of fourth, all but base of fifth and all of remaining segments, yellowish white; posterior coxæ and all the femora tinged with rufous; posterior tibiæ dusky at base and apex; antennæ rufous, blackish at base; scape pale at base beneath; wings smoky, appearing like smoked glass; veins brown, stigma and costal margin yellowish; third discoidal cell broad, the vein above broken and with a long stump; thorax and abdomen polished, shining; apical median cell indistinctly transversely rugulose; petiole oval, polished, spiracles prominent.

Two specimens from Colorado (types, coll. Amer. Ent. Soc.).

Exyston politus n. sp.

♀.—8 mm. Yellowish white with the following parts pale rufous; vertex above antennæ, occiput, upper portion of cheeks, median and lateral stripes on mesonotum, stripe on mesopleura extending from wings to middle coxæ, transverse narrow stripe at base of metanotum, spot covering apical portion of metathorax, basal half of petiole and narrow stripe at base of segments 2-5; spot enclosing ocelli and basal portion of antennæ, blackish; wings hyaline, nervures brown, stigma and costal margin reddish yellow; third discoidal cell narrow and with a minute stump of a vein above; thorax and abdomen polished, shining; apical median area transversely rugulose; petiole rather broad, polished, carinæ present on basal half, spiracles slightly raised.

One specimen from So. California (type, coll. Amer. Ent. Soc.).

Tribe PLECTISCINI.

1. Labrum more or less prominently projecting ..... 2.
   Labrum not distinctly projecting ..... 5.
2. Metanotum not areolated ..... 3.
   Metanotum with at least the area supero-media present ..... 4.
3. Wings with an areolet ..... **Adelognathus** Holmgr.
   Wings without an areolet ..... **Synæma** Foer.
4. Labrum deeply emarginate at apex; areolet wanting; abdominal segments 2 and 3 very smooth ..... **Notomeris** Foer.
   Labrum not emarginate at apex; areolet present; abdominal segments 2 and 3 not smooth ..... **Cnemischys** Foer

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5. Clypeus strongly elevated, and with a beak-like projection in ♀; abdomen rugose, sessile, basal segment without distinct furrow above.....6.
Clypeus not strongly projecting.....7.
6. Wings with an areolet.....***Grypocentrus** Ruthe.
Wings without an areolet.....**Campothreptus** Foer.
7. Wings with an areolet.....8.
Wings without an areolet.....14.
8. Face narrowed below.....**Catastenus** Foer.
Face not narrowed below.....9.
9. Metanotum not areolated.....**Aperileptus** Foer.
Metanotum areolated.....10.
10. Clypeus very flat.....11.
Clypeus arched and somewhat compressed at sides.....13.
11. Cheeks separated from face by a deep furrow; metathorax at base with 3 or 5 areolets.....12.
Cheeks not separated from face by a deep furrow; six areolets at base of metathorax.....***Holomeristus** Foer.
12. Clypeus transverse; three areolets at base of metathorax.
***Entypoma** Foer.
Clypeus subrhombic; five areolets at base of metanotum.***Blapticus** Foer.
13. Face separated from clypeus which is small, much compressed laterally and with large side grooves.....***Dialipsis** Foer.
Face not separated from clypeus, but indicated by a crease.**Plectiscus** Grav.
14. First segment of flagellum shorter than second; in ♂ the second member is emarginate.....**Miomeris** Foer.
First segment of flagellum as long, or longer than second.....15.
15. Segments 5-7 of flagellum in ♂ are emarginate; metathorax truncate at apex; hind coxæ granular.....**Helictes** Haliday.
Segments 5-7 not emarginate; metathorax of ♀ not truncate; coxæ not granular.....16.
16. Metathorax divided before the middle by a transverse carina.***Dicolus** Foer.
Metathorax not as above.....17.
17. Vertex open above and without transverse carina.....18.
Vertex entirely separated from occiput by transverse carina.....19.
18. Third segment of flagellum emarginate; stigma broad..***Apoclima** Foer.
Third segment of flagellum not emarginate; stigma small..**Ateleute** Foer.
19. Stigma very small.....***Polyaulon** Foer.
Stigma not small.....20.
20. Metathorax plainly and regularly areolated at base.....21.
Metathorax not plainly areolated at base.....23.
21. Antennæ less than thirty membered.....**Hemiphanes** Foer.
Antennæ more than thirty membered.....22.
22. Abdomen strongly compressed beyond fourth segment.***Myriarthrus** Foer.
Abdomen not strongly compressed.....**Megastylus** Schiödte.
23. Ovipositor projecting and with broad guides; members of flagellum from middle to tip almost string-like: all members, in ♂, cylindrical and with a whorl of hairs from each segment; segment 6 feebly emarginate.
Eusterinx Foer.
Ovipositor protruding and with very small guides; all members of flagellum cylindrical and not hairy; segment 6 not emarginate.**Proclitus** Foer.

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ADELOGNATHUS Holmgren.

(Monographia Tryphonidum Sueciæ, 196, 1858.)

Head subbuccate; clypeus large, arched, truncated, separated; labrum exserted, broad, convex; antennæ shorter than the body; metanotum not distinctly areolated; abdomen polished, basal segment large and with a broad shallow basin on disc; ovipositor exserted, short, straight; areolet of the wings subpentangular; posterior tibiæ robust with short apical spurs.

Adelognathus flavopictus n. sp.

♂ ♀.—2 mm. Black, with entire face above and below antennæ, scape, mouth-parts, prothorax, tegulæ, line beneath, sternum and lower mesopleuræ in ♂, legs, venter and abdomen above in ♀, on apex of second segment and base of third is a median, transverse, oblong elliptical spot and apex of following segments are smaller spots decreasing in size toward apex, in ♂ the spots are less elongate and are on base of second segment, apex of second and base of third, apex of third and base of fourth and on apex of the following, yellowish white; antennæ blackish, enlarging toward apex; wings hyaline, iridescent, nervures and stigma brown; areolet small.

Three specimens; the females are from Michigan Agricultural College and Illinois (Dr. Nason); the male has no locality label but 3494, and is in the coll. U. S. Nat. Museum. The female types are in the Agricultural College and coll. Davis.

Adelognathus (*Mesoleptus*) **rotundiceps** Cress., Tr. A. E. S. iv. 167.

♂.—3 mm. Pale ferruginous, with sutures of metathorax and apex of abdomen, subfuscous; wings subhyaline, nervures and stigma pale brown; areolet pentangular, incomplete; body finely shagreened; clypeus not strongly protruded; basal segment of abdomen broadly petiolate and with spiracles in the middle.

One specimen from Texas and in coll. U. S. Nat. Mus.

NOTOMERIS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Notomeris glabrosus n. sp.

♀.—4.5 mm.; ovipositor 1 mm. Black, with legs, mouth-parts, spot on front, scape beneath, tegulæ and an elliptical spot covering abdominal segments 2-4, amber-yellow; posterior tibiæ dusky on apical portion; antennæ dusky, yellowish on apical half; flagellum slender at base, gradually thickening until near the apex, segments not nodose at apex; 12-jointed, second segment of scape long; wings large, hyaline, iridescent, nervures brown, stigma black, large, triangular; areolet incomplete, as in *Hemiteles*; cubito-discoidal nervure broken and with a long vein reaching into cell of the same; head large, wider than thorax, finely shagreened, polished behind; clypeus large; labrum large, bristly, deeply excavated in the middle; thorax glabrous, without puncture; parapsidal grooves present anteriorly; scutellum elevated, oval; metathorax with supro- and postero-median areas, the latter large and flat; abdomen shaped as in *Stilpnus*, glabrous spiracles of petiole at middle of segment; venter white; ovipositor large, straight.

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One specimen from Mt. Washington, N. H. (Mrs. Slosson). Type, coll. Davis.

CATASTENUS Foerst.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Head small, transverse, narrowed below, polished and pilose; face oval, smooth and with a pitchy lustre; clypeus long, arched, compressed, sharply rounded at apex; mandibles prominent, palpi long, the maxillary extending to about the middle of mesosternum. Thorax short, rectangular, gibbous; metathorax excavated beneath; notum variable. Abdomen petiolate, subclavate, even above; petiole slightly arched, spiracles near the middle, no distinct median groove or carina; ovipositor exserted; wings with an oblique petiolate areolet; stigma triangular, rather large; humeral cross nervure not broken; third discoidal cell very long.

Metathorax strongly spined; thorax rufous to piceous.....**rufulus** Prov.
Metathorax not spined; thorax black.
Metanotum rugose and areolated; face black.....**glabrifrons** n. sp.
Metanotum and entire body polished, smooth; face yellow...**valerius** n. sp.

Catastenus rufulus Prov. (*Phygadeuon*). Faune Ent. Can. ii, 322.

♂ ♀.—6 mm. Head black, clypeus piceous, palpi yellowish, antennæ rufous to brown, paler at base; thorax varies from piceous to entirely rufous, scutellum slightly paler; abdomen with segments 2–4 rufous, apical segments piceous to black, petiole rufous to piceous; legs entirely rufous; wings hyaline, nervures and stigma brown; legs strong, hind femora swollen; tibial spurs very short and small; parapsidal grooves distinct; three basal segments of abdomen more or less distinctly aciculate; metathorax with strong, lateral, apical spines.

Three specimens from Canada and New Hampshire (type, coll. Quebec Museum).

Catastenus glabrifrons n. sp.

♂.—3.5 mm. Black, abdomen beyond petiole rufous, with piceous border; legs, scape, clypeus, mandibles and tegulæ, honey-yellow, palpi white; posterior tarsi and antennæ fuscous; wings hyaline, iridescent, nervures and stigma brown; metathorax and petiole rugosely shagreened and pilose; abdomen not aciculate.

One specimen from Algonquin, Ill. (Dr. Nason); coll. Davis.

Catastenus valerius n. sp.

♀.—2.5 mm.; ovipositor 1.5 mm. Black, with face, scape beneath, prothorax, tegulæ, spot at base of second abdominal segment and the legs honey-yellow; mouth-parts white; posterior tarsi and apex of tibiæ dusky; antennæ slender, black-brown and strongly pilose; wings hyaline, nervures and stigma brown; areolet small, very oblique; head and thorax highly polished, impunctured; metathorax without carinæ; abdomen polished, strongly compressed beyond the base of the second segment.

One specimen from Algonquin, Ill. (Dr. Nason). Type, coll. Davis.

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APERILEPTUS Foerst.

(Synopsis der Fam. und Gatt. der Ichneumonen. 1868.)

Body strongly shagreened. Head about the width of thorax, oval in front; clypeus narrow, elliptical, oval, strongly arched vertically; mandibles small; antennæ long, cylindrical. Thorax elongate, oval, tapering toward apex; parapsidal grooves wanting; scutellum oval; metathorax with only the apical transverse carina. Abdomen elongate, sessile; segments beyond the first rectangular. Legs long and slender. Wings elongate; areolet oblique, triangular, sessile; humeral cross nervure not broken.

Mesonotum and sternum rufous ..... **tropicus** n. sp.
Mesonotum and entire thorax black ..... **penuria** n. sp.

Aperileptus tropicus n. sp.

♂.—4 mm. Black, with mesothorax, except narrow stripe beneath wings and scutellum, rufous; anterior orbital lines, orbital spots above, two oblique stripes on face, clypeus, mouth-parts, cheeks beneath, tegulæ, spot in front, long lateral stripes on margins of mesonotum, posterior tibiæ at base and four anterior coxæ and trochanters, white; remainder of legs ferruginous, hind tarsi and apex of tibiæ dusky; antennæ black; wings hyaline, iridescent, nervures and stigma brown; basal segment of abdomen without carinæ, faint groove at base.

One specimen from So. California (type, coll. Amer. Ent. Soc.).

Aperileptus penuria n. sp.

♂.—5 mm. Black, with anterior orbital lines, orbital spots above, clypeus, mouth-parts, scape beneath, cheeks beneath, tegulæ, spot in front, margins of mesonotum and four anterior coxæ and trochanters, white; posterior coxæ piceous, posterior tarsi and tibiæ at apex dusky, remainder of legs honey-yellow; antennæ black; wings hyaline, nervures and stigma pale brown; basal segment of abdomen with faint, narrow groove.

One specimen from Canada (coll. Amer. Ent. Soc.).

MIOMERIS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Miomeris nasoni n. sp.

♀.—3 mm.; ovipositor .75 mm. Black, with scape beneath, mouth-parts, tegulæ, spot covering base of third and apex of second abdominal segments and legs reddish yellow; posterior tibiæ dusky, with a paler central annulus, hind tarsi also dusky; antennæ slender, black; third segment of flagellum longest, second longer than first; scape small, cone shaped; wings hyaline, nervures and stigma brown, the latter triangular; space of areolet large, pentangular in outline, the outer nervure wanting; head and thorax polished; parapsidal grooves present; metathorax gradually sloping to apex, areolated with high carinæ: abdomen polished subclavate, compressed from base of third segment; petiole broadly petiolate and broadly tuberculate on disc; legs slender; tibiæ constricted at base.

One specimen from Algonquin, Ill., sent by Dr. Nason, after whom the species is named. Type, coll. Davis.

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HELICTES Haliday—*Idioxus* Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Helictes ruficornis n. sp.

♂.—3.5 mm. Black, with antennæ, mouth-parts, tegulæ and legs, pale rufous; abdomen piceous, paler on second segment; wings hyaline, nervures and stigma pale brown, the latter lanceolate, slender; areolet wanting, no cubital cross-vein; antennæ large, filiform, and as long as body; basal segment of flagellum three or more times as long as the second; scape large, globular; body polished; metathorax truncate behind, areolated with high carinæ, strongly tuberculate in apical outer corners; metathorax and hind coxæ granular; abdomen petiolate, not compressed, the petiole is inflated on the disc near apex; legs slender; tibiæ not constricted at base.

One specimen from Algonquin, Ill. (Dr. Nason). Type, coll. Davis.

PLECTISCUS Gravenhorst.

(Ichneumonologia Europæa, Tom. ii, 978, 1829.)

Pleuræ black; abdomen narrowly sessile.

Stigma brown; hind coxæ yellow.....**gracilis** Prov.

Stigma yellow; hind coxæ partly or entirely black.....**niger** Prov.

Pleuræ rufous; face white; abdomen petiolate.....**pleuralis** Prov.

Plectiscus gracilis Prov., Faune Ent. Can. ii, 382.

♀.—6 mm. Black, with clypeus, mouth-parts, scape beneath, tegulæ and legs, pale yellow; posterior tarsi and extremity of tibiæ, dusky; wings hyaline, nervures pale brown, stigma yellow; areolet subquadrate, subpetiolate; legs and antennæ long and slender; abdomen depressed, narrowly sessile, the first segment slightly enlarged toward apex; ovipositor a little longer than the abdomen, black, straight.

(Taken from Provancher's description.)

Plectiscus niger Prov., Faune Ent. Can. ii, 793.

♂ ♀.—4 mm. Black, polished, with clypeus, mandibles and tegulæ, white; antennæ slender, brown at base; legs pale yellow, tibiæ and tarsi more or less dusky; hind coxæ black at base in ♀, entirely black in ♂; third abdominal segment more or less margined with red in ♂; ovipositor longer than abdomen; wings hyaline, iridescent, stigma brownish yellow, areolet rhomboidal, sessile.

(Taken from Provancher's description.)

Plectiscus pleuralis Prov. (*Meniscus*), Faune Ent. Can. ii, 381.

♀.—6 mm. Black, with face, cheeks, mouth-parts, tegulæ, four anterior coxæ and trochanters, base of posterior tarsi, spot at base on each side of second abdominal segment, median stripe from middle of segment two to apex of third segment and venter, white; sternum and pleuræ rufous; wings with a rhomboidal areolet, shortly petiolate, stigma reddish; legs pale rufous, with posterior tibiæ black at extremity; abdomen linear, depressed, somewhat compressed at apex; basal segment narrow, slender, gradually enlarged toward the extremity; other segments oval, elongate; ovipositor about a fourth as long as abdomen.

(Taken from Provancher's description.)

Tryphon laticinctus Cress., from Mexico, also belongs to this genus.

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MEGASTYLUS Schiödte.

(Mag. Zool. Ins. pl. vi. 1839.)

Megastylus albocollaris Cress. (*Mesoleptus*), Trans. Am. Ent. Soc. ii, 100. *Orthocentrus albofasciatus* Prov., Faune ii, 800, ♀.

♂ ♀.—4 mm. (♀) to 6 mm. (♂). Black or piceous, with legs brownish yellow; pleuræ, prothorax and face in ♀ rufous, in ♂ the prothorax and face, including mouth-parts, are yellow; scutellum and mesonotum rufo-piceous; abdomen with the third segment in ♀ and third and fourth in ♂, yellow; antennæ long, slender, tapering, pale brown, with scape large, oval, yellowish; segments of flagellum numerous, short and with whorls of hair on apical portion of each segment; wings subhyaline, iridescent, nervures and stigma yellowish brown; areolet wanting; stigma broadly lanceolate; second recurrent nervure straight, located obliquely; humeral cross nervure not broken; head small, globular, protruding beneath; clypeus large and long, arched; palpi long and slender; mesothorax with head polished, pilose; no parapsidal grooves; metathorax coarsely shagreened and with the two transverse carinæ; abdomen petiolate, shagreened, depressed; slender in ♂, much broadened toward apex in ♀; petiole slightly curved and widened toward apex, spiracles situated near the middle; ovipositor small, visibly exserted; legs long and slender, femora cylindrical, tibiæ narrowed at base, tarsi tapering.

Three specimens from Illinois; Canada, Prov. (type, coll. Amer. Ent. Soc.).

Megastylus caseyi Ashm. (*Spanotecnus*), Trans. Amer. Ent. Soc. xxiii, 196.

♂.—4 mm. Head and thorax as in *albicollaris*, except that the metapleuræ, mesonotum and scutellum are honey-yellow; abdomen not as slender and segments two and three pale yellow. The wings are hyaline, and nervures and stigma darker.

Type, coll. of Ashmead.

EUSTERINX Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Eusterinx negligere n. sp.

♀.—4 mm.; ovipositor .6 mm. Piceous black, with abdomen paler, apical margins of segments reddish margined with white; scape, mouth-parts, tegulæ and legs honey-yellow, with a whitish cast; scutellum and humeral margins reddish; antennæ slender, brownish red; wings hyaline, nervures and stigma dirty-yellow; stigma broadly lanceolate; areolet wanting, its space quadrangular; eyes large, coarse; clypeus broad, reaching from eye to eye, elliptical; head shagreened; thorax punctured and more or less finely reticulate; parapsidal grooves present; metathorax areolated, with plain, small carina; abdomen petiolate, two basal segments strongly aciculate, the others subpolished; ovipositor ventral, guides large; legs slender, tibiæ constricted at base.

One specimen from New Jersey (type, coll. Amer. Ent. Soc.).

PROCLITUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Proclitus flagellatus n. sp.

♂.—3 mm. Black, polished, with legs honey-yellow, mouth-parts, scape beneath and abdominal segments two and three pale reddish yellow; face, prothorax

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and apical portion of abdomen piceous; palpi white; flagellum of antennæ reddish brown, large, longer than body and of even size throughout; wings large, hyaline; nervures and stigma honey-yellow; areolet pentangular in form, but outer nervure wanting; legs long and slender; metathorax declivous, polished, completely areolated, the superior median area hexagonal; abdomen subcompressed at apex; petiole slender, arched; face punctured, tuberculate beneath antennæ.

One specimen from Colorado (type, coll. Amer. Ent. Soc.).

CAMPOTHREPTUS Foerster.

Campothreptus nasutus Cress. (*Mesoleptus*), Trans. Am. Ent. Soc. ii, 103.
Tryphon? nasutus Cress., Trans. Am. Ent. Soc. ii, 107.

♀ ♂.—4 mm. Black; mesonotum, sternum, pleuræ, pectus, scutellum, front and clypeus, pale rufous, varied more or less with white; narrow annulus toward apex of antennæ in ♀, orbital lines, cheeks, mouth-parts and venter, white; legs dirty honey-yellow varied with white; wings long, hyaline, nervures and stigma pale yellow; areolet wanting: transverse median nervure uniting back of the basal; head small, polished; eyes large and prominent; front oval, coarsely punctured; clypeus large, and in ♀ with a curved projection like the bill of a fish-hawk at upper side and beneath a mouth-like cavity, in ♂ strongly arched, not hooked; antennæ slender, long; thorax polished and punctured; mesonotum trilobed, deeply depressed on median apical portion and deeply and broadly excavated before scutellum; scutellum flat, elevated apically, and with lateral carinæ; metathorax rugose, carinate, with apical carinæ most prominent; abdomen closely and rugosely punctured with segments even; ovipositor exserted 1 mm.; basal segment broad, oval above and longitudinally aciculate.

Ten specimens from Michigan, Illinois, Pennsylvania, North Carolina and Colorado (type, coll. Amer. Ent. Soc.).

This species differs so materially from the European genus *Grypocentrus*, and shows so many characters common with the Plectiscini, that it has been placed here provisionally. It will probably form a new genus.

Tribe CTENOPELMINI.

1. Abdomen distinctly petiolate or subpetiolate.....2.
   Abdomen not distinctly petiolate, nearer sessile.....9.
2. Tarsal claws toothed with long and thick teeth.....3.
   Tarsal claws with fewer, shorter, or more distant teeth.....5.
3. Clypeus scarcely elevated above face, not compressed at tip..**Rhorus** Foer.
   Clypeus plainly elevated and compressed at tip.....4.
4. Wings without an areolet.....**Labroctonus** Foer.
   Wings with an areolet.....**Ctenopelma** Holmgr.
5. Segment 1 much broadened behind the spiracles and all the following as broad as long.....6.
   Segment 1 only partially broadened behind the spiracles and all the following not as broad as long.....7.
6. Clypeus with a transverse ridge; ovipositor straight; metathorax indistinctly areolated.....**Oetophorus** Foer.
   Clypeus without a transverse ridge; metathorax distinctly areolated.
   Sympherta Foer.

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7. Midvein in hind wing disappearing toward base.....* **Phrudus** Foer.
Midvein in hind wing not disappearing toward base.....8.
8. Metanotum not regularly areolated, and with only a very low, median, apical area; ocelli separated from each other farther than from edge of eyes. **Ecxetesis** Foer.
Metanotum regularly areolated; ocelli nearer to each other than to the edge of the eyes.....**Prionopoda** Holmgr.
9. Antennæ of ♂ broadly thickened in the middle; in ♀ the ovipositor is not visible.....**Enceros** Grav.
Antennæ of ♂ not broadly thickened in middle; ovipositor of ♀ plainly visible.....10.
10. Abdomen with apical transverse impressions on basal segments; antennæ slightly thickened in the middle and tapering to apex in both sexes. **Scopiorus** Foer.
Abdomen without transverse apical impressions on basal segments; antennæ rarely thickened in middle.....11.
11. Femora incrassate; grooves at sides of clypeus covered by a tuft of hair..12.
Femora not incrassate, or if so the clypeus is not separated from the face; grooves not covered.....13.
12. Wings with an areolet.....**Erromenus** Holmgr.
Wings without an areolet.....* **Trichocalymma** Foer.
13. Clypeus elevated and separated from the face by a distinct cross furrow, or if not, the metathorax is polished and without distinct carinæ.....14.
Clypeus not distinctly elevated and separated from the face; metathorax carinate.....**Monoblastus** Hartig.
14. Tarsal claws very thickly pectinate at tip and without teeth at base. * **Ctenacme** Foer.
Tarsal claws not thickly pectinate at tip and with comb-like teeth at base.15.
15. Vertex not separated from occiput by a sharp ridge; metanotum without carinæ.....16.
Vertex separated from the occiput by a sharp ridge..**Polyblastus** Hartig.
16. Wings without areolet; metatarsi enlarged; antennæ longer than body. **Scolobates** Grav.
Wings with an areolet; metatarsus not enlarged; antennæ short and small. **Lathrolestes** Foer.

RHORUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Head oval, transverse; face inflated beneath antennæ; clypeus not strongly separated, mandibles strong and often with the lower tooth the longer; antennæ longer than the body and slender. Thorax oval, somewhat depressed; metathorax with median areas small, lateral median areas very large and broad. Abdomen elongate; petiole narrow at base, gradually widening toward apex. Legs slender, tibiæ and tarsi long, tibial spurs short, claws thickly set with long teeth. Wings long, areolet triangular, slightly petiolate.

Abdomen rufous, black at base and apex.....**bicolor** Cress.
Abdomen with head and thorax black.....**ottawaensis** Harr.

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Rhorus bicolor Cress. (*Mesoleptus*), Proc. Ent. Soc. Phil. iii, 269.

Prionopoda ruficornis Ashm., Trans. Amer. Ent. Soc. xxiii, 198.

♂.—8 mm. Head and thorax black; abdomen rufous, with three apical segments piceous and petiole slightly so; legs rufous, trochanters and four anterior coxæ whitish; clypeus, mandibles and antennæ rufous, tegulæ whitish; wings hyaline, iridescent, nervures and stigma brown, paler at base; stigma broad, subtriangularly lanceolate, transverse median nervure unites back of basal; humeral cross nervure broken slightly above the middle; head and pleuræ coarsely and closely punctured; face narrowed beneath, clypeus scarcely elevated or separated from the front; parapsidal grooves indicated anteriorly; carinæ obsolete on metathorax; abdomen polished, shining; petiole smooth, without ridge or groove.

Three specimens from Pennsylvania, New York and Michigan (type, coll. Amer. Ent. Soc.).

Rhorus ottawaensis Harr., Can. Ent. xxiv, 98.

♀.—7 mm. Black, shining, with orbits, mouth-parts, tegulæ and parts adjoining it yellowish white; clypeus, scutellum and legs, pale rufous; posterior tibiæ and tarsi luteous, dusky at apex; antennæ brown, long, slender, pilose; wings large, hyaline, nervures brown, stigma large, yellow; radius starting back of the middle in the triangular stigma; areolet large, rhomboido-triangular, scarcely petiolate; second recurrent nervure straight; third discoidal cell strongly arched above and very narrow at base, so that it is almost triangular; humeral cross nervure not broken; head disc-shaped; face very flat and broad, coarsely punctured and with median vertical carina; clypeus scarcely distinct from the face, rounded at apex; mandibles arched; thorax pilose, polished, finely and sparsely punctured, most coarsely so on lower pleuræ and sternum; parapsidal grooves wanting; scutellum moderately elevated, oval; metathorax rounding, polished, completely areolated with very fine, but distinct carinæ; abdomen highly polished, subcompressed at apex; ovipositor exserted 1.5 mm.; petiole slender, polished, moderately broad at apex, narrow below the spiracles, which lie slightly back of the middle; legs well developed; posterior tibiæ and tarsi much elongate; tarsal claws strongly pectinate with long, close set teeth.

Described from Mr. Harrington's type from Ottawa, Canada.

LABROCTONUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Labroctonus articulatus Cress. (*Tryphon*), Trans. Am. Ent. Soc. ii, 110.

♀.—4.5 mm. Black, with abdomen piceous and legs yellowish brown; clypeus, mouth-parts, scape beneath, tegulæ, spot in front, apical margins of abdominal segments, trochanters and four anterior coxæ yellowish white; posterior tibiæ dirty white, dusky at apex; posterior coxæ piceous; antennæ brown; wings hyaline, iridescent, nervures and stigma brown; areolet wanting; stigma deep triangularly lanceolate; humeral cross nervure of hind wing broken much below the middle; body shining, polished, pilose; head flat, slightly narrowed and elongate toward mouth-parts; face oval, punctured, and with minute tubercle; clypeus large, elevated, and with transverse ridge near base; apical margin with row of long, stiff hairs; parapsidal grooves present anteriorly; mesonotum elevated; metathorax completely areolated; abdomen very broad in the middle and

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tapering to a point behind: ovipositor slightly exserted; petiole long, rather slender, but little widened at apex, polished and without carina or groove; legs slender and with claws closely pectinate with long teeth.

This species resembles the females of *Stilpnus* in form and appearance.

One specimen from Hudson Bay, Canada (type, coll. Am. E. S.).

CTENOPELMA Holmgren.

(Monographia Tryphonidum Sueciæ, 117, 1856.)

Head transverse, vertex emarginate; clypeus transverse, separated from front, elevated, impressed toward apex; mandibles large, teeth subequal; antennæ long, filiform. Thorax robust, polished; metathorax oval and not prominently areolated. Abdomen elongate, polished, pubescent; first segment slender, widening toward apex and with central longitudinal groove. Wings large, areolet present. Legs rather slender, tarsal claws with long thickset teeth.

Abdomen with head and thorax black.
Posterior femora and coxæ black ..... **primosa** n. sp.
Posterior femora and coxæ rufous ..... **indotata** n. sp.
Abdomen entirely or mostly rufous.
Head and thorax black ..... **nigricornis** Prov.
Head and thorax rufous ..... **sanguinea** Prov.

Ctenopelma primosa n. sp.

♂.—10 mm. Black, with face, anterior orbital lines, antennæ beneath, mouth-parts, cheeks, tegulæ, line before, line beneath, spot on anterior mesopleura, pectus, anterior coxæ beneath, four anterior trochanters, base and apex of four anterior tibiæ and tarsi, apical segment of posterior trochanter, tibiæ except apex and basal tarsal segment except apex, white; remainder of legs and the antennæ black to dusky; wings hyaline, polished, iridescent; nervures and stigma black; stigma slender, lanceolate, marginal nervure entering at the middle; transverse median nervure interstitial with basal; body shagreened, finely pilose; clypeus thick, oval, with quite a groove between it and the face; mesonotum subtrilobed; metathorax strongly carinate; two basal segments of abdomen strongly shagreened.

One specimen from Texas (type, coll. Amer. Ent. Soc.).

Ctenopelma indotata n. sp.

♂ ♀.—6 mm. Black, with anterior orbital lines, mandibles and palpi in ♀, whole face, mouth-parts and cheeks beneath in ♂, scape beneath, tegulæ, spot in front and in ♂ the pectus and anterior coxæ, white; legs rufous, posterior tibiæ and tarsi dusky; antennæ reddish brown; wings hyaline, brightly iridescent, areolet triangular, subsessile, oblique: humeral cross nervure broken above the middle; general form and sculpture as in *primosa*.

One female and two males from Texas (type, coll. U. S. Nat. Mus.).

Ctenopelma nigricornis Prov. (*Mesoleptus*). Add. Faune Hymen. 99.

♀.—9 mm. Black, with abdomen rufous beyond basal portion of segment 2;

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face, mouth-parts, orbital lines on vertex, tegulæ, line in front, another beneath, scutellums and four anterior legs except femora, yellowish white: coxæ black, remainder of legs dusky rufous; antennæ long, slender, black; wings subhyaline, nervures brown, stigma yellow, areolet small, petiolate, triangular; thorax polished, robust; metathorax with a moderately distinct longitudinal areolet; abdomen polished, oval, elongate, truncate at extremity.

(Taken from Provancher's description.)

One specimen from Ottawa, Canada.

Ctenopelma sanguinea Prov., Faune Ent. Can. ii. 406.

♀ ♂.—8-10 mm. Ferruginous, with scutellum, tegulæ and line beneath in ♀, and in ♂, scutellums, tegulæ, spot in front, line beneath, sternum, face, orbital lines and mouth-parts, yellow; four anterior legs and prothorax yellowish; wings subhyaline, nervures brown; stigma yellow, slender, lanceolate; areolet small, petiolate; transverse median nervure unites back of basal; transverse humeral nervure of hind wing broken slightly below the middle; body polished, strongly pilose; clypeus with transverse median carina; parapsidal grooves present; carinæ on metathorax small, rather indistinct; abdomen slender, smooth; ovipositor slightly exserted, guides broad; petiole thick, oval above, slender.

Eight specimens from Canada, Delaware, New Jersey, Montana, Idaho (Prof. Aldrich) and Washington.

OETOPHORUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Body shagreened, finely punctured, pleuræ polished. Head inflated behind eyes, oval in front; clypeus elevated and with oval, transverse, median ridge. Thorax somewhat depressed, broad; parapsidal grooves present; carinæ small, or nearly obsolete on metathorax. Abdomen strong, subclavate in ♀; ovipositor short, straight; petiole oval above, smooth, slightly arched, considerably widened toward apex. Wings with large, triangular stigma; areolet present, triangular, subsessile.

Humeral cross nervure of hind wing broken at or above the middle.
- Abdominal segments with plain white apical margins; mesothorax rufous; face yellow ..... **nasoni** n. sp.
- Abdomen and thorax black to piceous ..... **stretchii** Cress.

Humeral cross nervure broken far below the middle.
- Body mostly black ..... **osflavus** n. sp.
- Body ferruginous ..... **oculatus** n. sp.

Oetophorus nasoni n. sp.

♀.—7 mm. Black, with most of mesothorax, including scutellum, rufous; apical and lateral margins of all the abdominal segments distinctly white; face, scape beneath, mouth-parts, lower cheeks, prothorax except collar above, tegulæ, cuneiform line on margins of mesonotum, trochanters and four anterior coxæ, pale yellow; remainder of legs honey-yellow; antennæ rufous, brown above; wings hyaline, nervures and stigma brown, paler at base.

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One specimen. Dedicated to Dr. Nason, of Algonquin, Ill., the collector (type, coll. G. C. D.).

Oetophorus stretchii Cress. (*Mesolius*), Proc. Ac. Nat. Sci. Phil. 1878. 371.

♀.—7 mm. Black, with middle of abdomen, mesonotum and antennæ piceous; legs, mouth-parts and scape rufous; wings hyaline, iridescent, nervures, stigma and tegulæ yellow.

What is probably the ♂ of this species differs in having the piceous parts less marked; the face, except median black line, mouth-parts, cheeks beneath, scape beneath and tegulæ yellow; four anterior legs are paler than posterior pair, hind tarsi and tibiæ at apex dusky; veins and stigma brown.

Female type from California and the male from Colorado (coll. Amer. Ent. Soc.).

Oetophorus osflavus n. sp.

♀.—7 mm. Black, with sternum, second abdominal segment and basal half of third rufous; legs and antennæ beneath pale rufous, trochanters yellowish; mouth-parts, cheeks beneath, tegulæ and spot before, lemon-yellow; wings hyaline, iridescent, nervures and stigma nearly black, yellowish at base.

One specimen from Agric. College, Mich. (type, coll. M. A. C.).

Oetophorus oculatus n. sp.

♀.—7 mm. Rufous, with anterior orbits, clypeus, mouth-parts, cheeks beneath tegulæ, point in front and four anterior trochanters, yellowish white; wings hyaline, nervures and stigma yellowish brown: eyes small, well set into the head; ocelli in a black setting; antennæ dusky above, reddish brown beneath.

Seven specimens from Texas (type, coll. U. S. Nat. Mus. and Amer. Ent. Soc.).

SYMPHERTA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Head and thorax black, abdomen rufous; humeral cross nervure of hind wing broken below middle.....**burrus** Cress.

Head, thorax and abdomen pale brownish yellow; humeral cross nervure of hind wing broken above middle.....**unicolor** Cress.

Sympherta burrus Cress. (*Tryphon*), Trans. Amer. Ent. Soc. ii. 108.

♀ ♂.—8 mm. Head and thorax black, legs and abdomen rufous; mandibles, palpi and tegulæ whitish; clypeus piceous; antennæ reddish brown; wings subhyaline, nervures and stigma brown, pale at base; stigma thick, lanceolate; areolet oblique, petiolate; third discoidal cell short, broad; humeral cross nervure of hind wing broken below the middle; head broad, flat in front, clypeus oval, punctured, scarcely separated from the face, rounded at apex; antennæ short and with thickset segments, scape long, large at apex, narrowed at base; thorax pilose, finely punctured, pleuræ polished; parapsidal grooves present; metathorax with prominent carinæ, the transverse basal carina absent, basal median cell small and long, apical one large; abdomen broad, depressed, widest on third and fourth segments; ovipositor small, short, curved upward; petiole

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slender, rapidly widened behind the spiracles; dorsal carinæ prominent, postpetiole and second segment longitudinally aciculate; legs strong, posterior coxæ short.

Two specimens from Connecticut (type, coll. Am. Ent. Soc.).

Sympherta? unicolor Cress. (*Mesoleptus*). Proc. Ent. Soc. Phil. iii, 271.

♀.—7 mm. Uniform brownish yellow; wings hyaline, nervures and stigma brown; stigma very large, rounded on the inner side and with marginal nervure uniting toward the base: areolet large, oblique, slightly petiolate: third discoidal cell strongly narrowed at base, the nervure above being strongly bent near the base; humeral cross nervure of hind wing broken much above the middle; head small, inflated; eyes well set in the head; antennæ long, slender; clypeus oval, rounded at apex and with only slight groove at base; parapsidal grooves present; metathorax completely areolated, the carinæ small, median areas small, elongate; abdomen subclavate, smooth above; ovipositor short, straight; petiole gradually widening toward apex, without carinæ or groove.

Three specimens, Pennsylvania, Canada and Delaware (type, coll. Amer. Ent. Soc.).

ECZETESIS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Eczetesis paniscoides Ashm.. Trans. Am. Ent. Soc. xxiii, 197.

♀.—8-10 mm. Honey-yellow, with abdomen darker toward apex; face, prothorax and tarsi paler; antennæ long, slender; wings large, hyaline, iridescent, nervures and stigma color of body; areolet triangular, slightly petiolate, cubitodiscoidal nervure strongly arched, but not broken, humeral cross nervure of hind wing broken slightly above the middle; no parapsidal grooves, metathorax smooth and without carinæ; abdomen slender, subcompressed toward apex, petiole straight, ovipositor exserted.

The ♂ described by Mr. Ashmead is *Paniscus albotarsatus* Prov. The two species can be easily separated by the marginal nervure, which is broken above the areolet in *Paniscus* and not *Eczetesis*.

Three females Central Park, N. Y. (Ashm.), Algonquin, Ill. (Dr. Nason), and Montgomery County, Pa. (Johnson). Type, coll. Ashmead.

PRIONOPODA Holmgren.

(Monographia Tryphonidum Sueciæ, 120, 1856.)

Prionopoda (?) beginii Ashm., Trans. Amer. Ent. Soc. xxiii. 198.

♂.—7 mm. Black, with apical portion abdominal segments 1 and 2, apical half of 3 and basal half of 4, with most of the legs, rufous; four anterior coxæ and trochanters, apical half of posterior trochanters, tegulæ, mandibles, palpi and base of tibiæ, yellowish white; apex of posterior tibiæ and tarsal segments dusky, hind coxæ black; head large, broad, clypeus wanting; face coarsely punctured and pilose; thorax punctured, abdomen shagreened; metathorax arcolated, basal transverse carina wanting, spiracles oval; petiole of abdomen much as in *Campoplegini*, to which it should probably be referred. It is a ♂ instead of a ♀.

Described from type specimen, Sherbrook, Canada (coll. Ashm.).

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EUCEROS Gravenhorst.
Eumesius Westwood.
(Ichn. Europ. T. III, 368, 1829.)

This genus is characterized primarily by the concealed ovipositor in the ♀ and by the antennæ in the ♂ being flat and greatly broadened from joints 10–15, gradually tapering to a point at apex. The antennæ of the ♀ also partake somewhat of this form. Other characteristic points are: pectinate claws, sessile abdomen, with two usually distinct, converging carinæ at base; segments broader than long; metanotum with two median longitudinal carinæ diverging from the base; wings more or less dusky at the apex, without areolet and with second recurrent nervure sinuate.

Posterior tibiæ black or dusky, yellow at base.
  Coxæ black to yellow.
    Abdomen varied with black and yellow and always with a more or less distinct, median, longitudinal, yellow stripe; stigma rufous; hind coxæ and scutellum at base, mostly black.....**canadensis** Cress.
    Abdomen black, with apical half of all the segments yellow; stigma black; scutellum at base and most of hind coxæ, yellow.....**obesa** n. sp.
    Abdomen, except basal segment, rufous.....**couperii** Cress.
  Coxæ, femora and abdomen rufous.....**frigidus** Cress.
Posterior tibiæ rufous, sometimes yellow at base.
  Hind tarsi rufous, with median segments yellow; wings very dark at apex. **sanguineus** n. sp.
  Hind tarsi unicolor, wings faintly dusky at apex.
    Sternum lemon-yellow.
      Notum black and yellow.....**thoracicus** Cress.
      Notum and abdomen dark rufous.....**faciens** n. sp.
    Sternum color of the remainder of thorax.
      Abdomen fulvous, with more or less distinct, transverse, yellow spots; thoracic vittæ yellow.....**medialis** Cress.
      Abdomen and thorax uniform bleached fulvous.....**flavescens** Cress.

Enceros canadensis Cress., Can. Ent. i, 104.

♀.—11 mm. Black, with the following parts lemon-yellow: front except portion enclosing antennæ, broad orbital lines, mouth parts except tips of mandibles, prothoracic collar, more or less distinct lines along parapsidal grooves, recurving on margin of mesonotum, tegulæ, spot in front, line beneath, narrow line and spot in front and behind on mesopleura, broad margin of scutellum, postscutellum, capillary lines to scutellums, more or less of apical portion of metathorax, four anterior legs, posterior trochanters, base and apex of femora, base of tibiæ, tarsi, median transverse bands at apex of segments 1-3, broad median spot at base of first segment, more or less distinct, longitudinal, median stripe on segments and venter; femora dusky rufous; antennæ black, fulvous at apex; wings hyaline, dusky at tip, stigma slender, rufous.

♂.—Differs in having the antennæ much broadened in the middle and in having the sternum, most of pleuræ, middle of antennæ, inner and under portion

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of hind coxæ and broader bands on the abdomen, yellow; the median stripe on segments 1–4 distinct, separating the black cross-bands.

Two females and one male from Canada, New York and Michigan (type, coll. Amer. Ent. Soc.).

Euceros obesa n. sp.

♀ (?)—11 mm. Black, with yellow markings as follows: front except spots above antennæ, broad orbital lines broken above, mouth-parts except tips, mandibles and sides of clypeus, diagonal line above anterior coxæ, broken median and broad marginal lines on mesonotum, tegulæ, large stripe in front, line beneath primary and secondary wings, broad diagonal expanding line from middle coxæ to prothorax, metathorax except basal suture, scutellum except dot on each side, postscutellum and capillary lines, oval spot at base of abdomen, apical half of all the segments; the legs are also yellow except the posterior, which have a black spot above and another inside the coxæ, dusky rufous femora, apical half of tibiæ and basal segment of tarsi, which are piceous; wings with veins brown, stigma black, costal margin and base of stigma fulvous; apex of wings dusky; antennæ wanting; coarsely and rather closely pitted on all parts of the body.

A large, robust specimen from N. Illinois (Dr. W. A. Nason). Type, coll. G. C. D.

Euceros couperii Cress., Can. Ent. i, 104.

♀.—6–10 mm. Head, thorax, legs and antennæ black, with yellow markings; abdomen rufous, black on first segment; broad orbital lines, broken above, small T above antennæ, clypeus, mouth-parts except tips of mandibles, margins of mesonotum extending onto middle lobe, tegulæ, spot in front, line beneath, one or two spots on mesopleuræ, at least margins of scutellum, postscutellum, four anterior legs except coxæ, hind legs with trochanters, base and apex of femora, base of tibiæ, and usually all of tarsi, yellow; apical third of antennæ and apex of hind femora are fulvous; the mesonotum sometimes has the yellow markings margined with rufous; the abdomen is dark rufous, with two black lateral patches on basal segment; wings hyaline, dusky at apex; body shining, finely punctured.

♂.—Differs in having the entire face, sternum, pleuræ, except upper portion, yellow; antennæ entirely fulvous, dusky within and pale without in the middle.

Four females from New Hampshire (Mt. Washington, Mrs. Slosson); ♂ from Canada (type, coll. Amer. Ent. Soc.).

Euceros frigidus Cress., Can. Ent. i, 105.

♀.—8 mm. Mostly ferruginous; basal two-thirds of antennæ, occiput, vertex around ocelli, face, border of mandibles, prothorax, sutures between mesonotum and pleurites, posterior tibiæ except at base and base of first tarsal segment, black or piceous; broad orbital lines, connected above antennæ, cheeks, clypeus, base of mandibles, palpi, margin of mesonotum except in front, tegulæ, line beneath, broad margin of scutellum, postscutellum, trochanters, base of posterior tibiæ, more or less of tarsi, and narrow apical margin of three basal segments of abdomen, pale yellow; apex of antennæ fulvous.

♂ has the entire face, except at base of antennæ, yellow; the mesonotum and base of posterior femora blackish; the antennæ have the broadened portion yellowish with the inside made dusky by two longitudinal dark stripes originating at the base; apex dusky fulvous.

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Three specimens, Canada, Maine and Franconia, N. H. (Mrs. Slosson). Type, coll. Amer. Ent. Soc.

Enceros sanguineus n. sp.

♀.—10 mm. Rufous, with sutures of thorax, sternum, apex of metathorax, base of abdomen, line on posterior coxæ, tips of mandibles, spot enclosing ocelli and others surrounding base of antennæ, more or less black; palpi and segments 2–4 of hind tarsi pale yellow; the body is finely and quite evenly punctured throughout, form robust; the converging ridge at the base of the abdomen almost obsolete; wings hyaline, darker than usual at apex; veins dark; costal margin and stigma pale rufous.

♂ with the thorax except notum, basal segment of abdomen except a central rufous stripe or two lateral dots, vertex and most of coxæ, black; yellow markings as in ♀ with the face, orbits, cheeks, mouth-parts, and sometimes four anterior coxæ beneath, tegulæ, line above and below and spot on anterior mesopleura also yellow; antennæ dusky rufous with the inner side of segments 9-12 of the flagellum blackish with yellow border and dotted with yellow pits.

Two females and two males from Colorado (Prof. C. P. Gillette). Type, coll. G. C. D. and Amer. Ent. Soc.

Enceros thoracicus Cress., Can. Ent. i, 105.

♂.—9 mm. Thorax with the notum black and yellow; sternum and most of pleuræ pale yellow; head yellow except spot enclosing ocelli and occiput; abdomen honey-yellow, more or less stained with pale yellow on basal segments; legs pale yellow with posterior legs having coxæ dark above, femora honey-yellow and tibiæ except at base dusky red; antennæ fulvous at apex, dusky yellow at base, pale yellow in the middle with two longitudinal dark bands inside; wings hyaline, faintly dusky at apex, veins and stigma pale; basal segment of abdomen distinctly raised between carinæ.

Two specimens, Connecticut and Toronto, Canada (type, coll. Amer. Ent. Soc.).

Enceros faciens n. sp.

♂.—10 mm. Rufous with yellow markings as follows: entire head except vertex, occiput, pits around base of antennæ and tips of mandibles which are black, tegulæ, spot in front, line beneath, line above extending from tegulæ to beyond parapsidal grooves, line from secondary wing to middle coxæ, lower half of pleuræ, most of sternum, spots above anterior and posterior coxæ, four anterior coxæ, and femora at base, all the trochanters and narrow apical margins of abdominal segments 1-3; most of prothorax, upper mesopleura, stripes on sternum and apex of metanotum, black; antennæ as in *sanguineus;* wings subhyaline, faintly dusky at tip, veins brown, stigma and costal margin rufous; first segment of abdomen concave at base, margined with a much elevated carina; the transverse carina on the metathorax is also distinct.

One specimen from Washington (type, coll. G. C. D.).

Enceros medialis Cress., Can. Ent. i, 105.

♀.—9-10 mm. Rufo-ferruginous with yellow markings as follows: head, except dusky stain around ocelli, margins of parapsidal grooves and mesonotum at sides, tegulæ, line beneath, spot on upper mesopleuræ and another below near

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middle coxæ, scutellums, most of metathorax, more or less of dorsal portions of abdominal segments, four anterior legs, hind trochanters and base of tibiæ; antennæ pale, more or less dusky in the middle; wings hyaline, slightly dusky at tip; costal margin and stigma pale.

Six specimens, Canada, New York, Massachusetts and Moscow, Idaho (J. M. Aldrich), Philadelphia (Chas. W. Johnson), Mt. Washington, N. H. (Mrs. Slosson), Illinois (Dr. Nason). Type, coll. Amer. Ent. Soc.

Euceros flavescens Cress., Can. Ent. i, 105.

♀.—Differs in being fulvo-ferruginous with no distinct yellow markings; the face varies from blackish red to black; antennæ also vary the same; the ♂ has essentially the same pale markings that *medialis* ♀ has, but the antennæ are characteristic in color of *flavescens* ♀: the two species will probably be found to be synonymous, but the material is too limited to deal definitely with them at present; the markings are somewhat variable.

Two females, Connecticut and Virginia; two males Virginia and Illinois (Dr. Nason). Type, coll. Amer. Ent. Soc.

SCOPIORUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen. 1868)

Head transverse, flat, somewhat inflated beneath antennæ; face strongly pilose, clypeus with long bristles; clypeus narrow, elliptical, arched, and with small transverse ridge near the middle; antennæ long, thickened in the middle, tapering toward apex. Thorax broad, gibbous, pilose, coarsely punctured; parapsidal grooves wanting; scutellum triangular, elevated; metathorax areolated, basal transverse carina wanting; abdomen broad, depressed, subcompressed at apex in ♀; coarsely and often rugosely punctured on basal segments; segments 1 and 2 and sometimes 3 with distinct transverse impression before the apex; basal segment broadly sessile and with carinæ at base; ovipositor exserted, and when protruded is pushed beneath and curved anteriorly, shields broad; wings with the areolet usually wanting, sometimes incomplete or variable; stigma broad, thick, triangular, more abrupt on apical side than on basal; humeral cross nervure of hind wing broken much below the middle.

Thorax and body rufous.....**gillettei** n. sp.
Thorax black, lower pleuræ sometimes yellow.
  Posterior coxæ black; abdomen mostly black.
    Hind legs mostly black or dusky, trochanters pale.....**expansa** n. sp.
    Hind legs entirely pale, except coxæ and trochanters.....**hiatus** n. sp.
  Posterior coxæ rufous.
    Abdomen black, with apical margins of segments yellow: lower pleuræ yellow in ♀.....**quebecensis** Prov.

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Abdomen rufous, black at apex and sometimes at base.
Face yellow.....**analis** Cress.
Face, above clypeus, black.....**suberassus** Cress.
Abdomen and legs entirely rufous; scape black; areolet wanting.
extricatus n. sp

Scopiorus gilletiei n. sp.

♀.—7 mm. Rufous, with the sutures around the scutellum, and sometimes more or less of ventral part of thorax, and apex of posterior femora, black: apical segments of abdomen more or less piceous; clypeus, mouth-parts, scape beneath, tegulæ and sometimes lower face and cheeks beneath, lemon-yellow; wings subhyaline, nervures and stigma dark brown, yellow at base; areolet wanting, incomplete or present and petiolate, according to specimen.

Four specimens from Prof. Gillette, of Fort Collins, Colorado, and to whom I take pleasure in dedicating the species. Types, coll. Davis and Amer. Ent. Soc.

Scopiorus expansa n. sp.

♂.—6 mm. Black, with clypeus, except basal portion, mouth-parts and sometimes trochanters, yellow; tegulæ white; abdomen piceous, with segments 2 and 3 rufous at apex on lateral margins, and with broad, median, longitudinal stripe, becoming less distinct on segment 4; legs rufous, middle coxæ above and hind coxæ black, piceous at apex; apex of femora, and tibiæ and tarsi of hind legs, dusky; antennæ dark brown; wings subhyaline, nervures and stigma dark brown, yellow at base; areolet present, petiolate.

Two specimens from Colorado and Montana. Type, coll. Davis and Amer. Ent. Soc.

Scopiorus hiatus n. sp.

♂ ♀.—8 mm. Head, antennæ, thorax, all coxæ and trochanters, basal abdominal segment and three apical ones, four apical ones in ♀, black; remainder of legs rufous, except base of tibiæ, which are lemon-yellow; apical portion of clypeus rufous, tegulæ white; wings hyaline, areolet present, petiolate, oblique.

Two specimens from Agricultural College, Michigan (coll. College and Davis).

Scopiorus quebecensis Prov. (*Polyblastus*), Faune ii, 420.
Tryphon flavifrons Fyles, Can, Ent. xxv, 107.

♂ ♀.—5 mm. Black, with face, mandibles, scape beneath, tegulæ, point in front and venter, white; a black transverse line above clypeus; palpi and antennæ brownish yellow; apical margins of abdominal segments yellow, less so in ♂; sternum, lower pleuræ, flanks of metathorax and legs yellowish red; posterior tibiæ dusky at apex; wings hyaline, nervures and stigma black, white at base; areolet wanting; abdominal segments 2 and 3 with strong transverse impressions in the middle; basal segment broad, carinæ reaching the apex.

Three specimens from Quebec, Canada (type, Quebec Museum).

Scopiorus analis Cress. (*Tryphon*), Proc., Ent. Soc. Phil. iii, 279, ♂.
Tryphon occidentalis Cress., Trans. Amer. Ent. Soc. ii, 109, ♀.

♂ ♀.—6-7 mm. Black, with legs and first three or four basal segments of abdomen rufous; face, mouth-parts, scape beneath, tegulæ, trochanters and venter,

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yellow; in addition to this the ♀ has the lower half of cheeks, pectus, sternum, lower margin of pleuræ, four anterior coxæ and apical margin of last two or three abdominal segments, yellow; the ♂ has more or less of a vertical line on the face and in clypeal suture; antennæ reddish brown, more yellow in ♀; wings subhyaline, nervures and stigma brown, yellow at base; areolet usually present, sometimes wanting; third discoidal cell short, broad at base.

Four specimens from Illinois, Pennsylvania and New Hampshire (type, coll. Amer. Ent. Soc.).

Scopiorus suberassus Cress. (*Tryphon*), Trans. Amer. Ent. Soc. ii, 109.
Polyblastus dilatus Prov., Faune Ent. Can. ii, 419.

♂ ♀.—5-7 mm. Black, with clypeus, mandibles, palpi, tegulæ and scape beneath, yellowish white; abdomen varies from rufous with two apical segments black, to black with second segment rufous, and in one specimen this segment is piceous; legs rufous, often with apex of femora and tibiæ and the tarsi of hind legs, dusky: antennæ vary from pale reddish brown to nearly black; wings hyaline, nervures and stigma brown, yellow at base; areolet usually present, often incomplete; third discoidal cell broad and short.

Thirteen specimens from Massachusetts, New Hampshire, Maine, Canada, Connecticut, Pennsylvania, Michigan and Montana (type, coll. Amer. Ent. Soc.).

Scopiorus extricatus n. sp.

♀.—7 mm. Black, with legs and abdomen entirely rufous; base of mandibles and tegulæ white; clypeus yellow, black at base; palpi dusky yellow; antennæ reddish brown, scape black; wings hyaline, nervures and stigma brown: areolet wanting; most of head, dorsum of meso- and metathorax, scutellum, upper pleuræ and apical portion of abdomen polished, sparsely punctured.

One specimen from Colorado (type, coll. Amer. Ent. Soc.).

ERROMENUS Holmgren.

(Monographia Tryphonidum Sueciæ, p. 221, 1856.)

Head broad, disc-shaped, slightly inflated behind eyes; eyes small and set well into the head; face broad, pilose, punctured, somewhat tuberculate beneath antennæ; clypeus punctured, narrow, elliptical, with transverse ridge near base; antennæ short, more or less thickened in the middle. Thorax broad, oval, coarsely punctured and pilose; parapsidal grooves wanting; scutellum broad, subtriangular, carinate laterally; metathorax completely areolated, or with the basal transverse carina incomplete. Abdomen strong, segments broad; oblique grooves at base of segment 2; petiole very broad, gradually narrowed to base, dorsal carinæ distinct; ovipositor short, acuminate, incrassate, curved at base. Legs short, strong; posterior femora incrassate, short; claws pectinate. Wings with heavy nervures, areolet small, petiolate; humeral cross nervure of hind wing broken far below the middle.

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Abdomen with narrow, red, apical margins; legs ferruginous, except hind tarsi and tibiæ, which are brown.....**marginatus** Prov.
Abdomen entirely black.
Posterior legs mostly rufous.....**crassus** Cress.
Posterior legs black, with more or less yellow on tibiæ.....**tristis** Prov.
Abdomen more or less rufous.
Wings subhyaline to hyaline; abdomen coarsely punctured, black at base and usually at apex.....**dimidiatus** Cress.
Wings fuscous; abdomen glabrous, finely punctured and entirely rufous. **glabrosus** n. sp.

Erromenus marginatus Prov., Faune ii, 797.

♀.—7 mm. Black, with mandibles, palpi and tegulæ yellowish; clypeus and legs, except hind tarsi and apex of their tibiæ, ferruginous; abdominal segments finely margined with red at the apex.

Type from Cape Rouge, Canada, and in the Quebec Museum.

Erromenus crassus Cress. (*Tryphon*), Trans. Am. Ent. Soc. ii, 107.
Tryphon tejonicus Cress., Proc. Acad. Nat. Sci. Phila. 1878. 372, ♂.

♂ ♀.—7 mm. Black, with apical portion of clypeus, mouth-parts and antennæ in ♀, dusky rufous; legs rufous, in one ♂ the coxæ are piceous and in the other they and the trochanters are black; antennæ brownish black in ♂; wings subhyaline, nervures and stigma piceous; stigma thick, triangular, carinæ on basal segment of abdomen reach the apex.

Three specimens from New Jersey, Massachusetts and California, also Canada (Cresson). Types, coll. Amer. Ent. Soc.

Erromenus tristis Prov., Add. Faune 110.

♀ ?—7 mm. From Provancher's description the only difference between this species and *crassus* is that the legs in this species are black, except the four anterior tibiæ, which are yellow or spotted with yellow at the base beneath.

One specimen from Ottawa, Canada.

Erromenus dimidiatus Cress. (*Tryphon*), Trans. Amer. Ent. Soc. ii, 108.
Tryphon atricoxus Walsh, Trans. St. Louis Acad. iii, 104.

♂ ♀.—6-7 mm. Black, with abdominal segments 2-4 usually rufous, sometimes 3 and 4 are piceous or black; legs rufous, with coxæ, and usually trochanters, black; posterior tibiæ with a more or less distinct yellow annulus at base; apical portion of clypeus dusky rufous to yellowish; tegulæ piceous to yellow; antennæ black; thorax and abdomen coarsely punctured; head and thorax strongly pilose; wings subhyaline; nervures and stigma brown, paler at base.

Twenty-four specimens from New Hampshire, Massachusetts, New Jersey, Pennsylvania, Michigan, Illinois, Colorado, Montana, Idaho and Washington (type, coll. Amer. Ent. Soc.).

Erromenus glabrosus n. sp.

♂ ♀.—8 mm. Head and thorax black; abdomen entirely rufous, polished, finely and sparsely punctured; legs rufous, coxæ black, trochanters dusky, tibiæ yellowish at base; clypeus except base, most of mandibles, palpi and tegulæ, yellowish to dusky rufous; antennæ dark brown; wings fuscous, iridescent, nervures and stigma dark brown, paler at base; the entire body is much more highly polished and with finer punctures than in the preceding species.

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Two specimens from Windy River, Wyoming, and So. California (types, coll. Amer. Ent. Soc. and Davis).

MONOBLASTUS Hartig.

(Wiegemann's Archiv für Naturgeschichte, Jahrg. 3, H. 2, p. 155-156, 1837.)

Head broad, disc shaped, oval in front, punctured; clypeus not or indistinctly separated from the front, with deep pits at either side above, punctured, and broadly rounded at apex; antennæ nearly as long as body and heavy set. Thorax large, oval, coarsely punctured, parapsides wanting, or only indicated; pleuræ punctured; scutellum elevated, triangular and with lateral carinæ at base; metathorax rugose, with carinæ usually distinct and complete, or lacking the transverse basal one. Abdomen moderately broad; basal segment broad, considerably narrowed at base, carinæ present on basal portion; ovipositor short, straight, incrassate at base and usually placed perpendicular along the apex of the last segment which is often excavated. Legs strong, femora swollen, somewhat short, claws pectinate. Wings with strong nervures and a broad, thick, triangular stigma; areolet present, petiolate; third discoidal cell short, broad; transverse median nervure lies back of basal; humeral cross nervure of hind wing broken much below the middle.

Head and thorax black.
Clypeus black or piceous; scutellum black.
Wings subhyaline; face, basal segment of abdomen and usually the hind femora, black ..... **obscurellus** Cress.
Wings dusky; face with large yellow spot; abdomen and femora rufous. **punctifrons** n. sp.
Clypeus and face yellow, scutellum usually yellow ..... **varifrons** Cress.
Head and thorax mostly rufous, abdomen and legs entirely so; face yellow; basal segments of abdomen aciculate ..... **aciculatus** n. sp.

Monoblastus obscurellus Cress. (*Errorneus*), Pr. A. N. S. Phil. 1878, 373.

♂ ♀.—6-8 mm. Head and thorax black, with mandibles, palpi and tegulæ, yellow or dusky yellow; abdomen rufous, basal segment black, sometimes rufous at apex. ♂ with three or four apical segments piceous; legs rufous, with coxæ, trochanters, and often the femora in part, black; posterior tarsi and apex of tibiæ sometimes dusky; antennæ black; wings subhyaline, nervures and stigma brown, pale at base; the mandibles when closed are almost hidden beneath the clypeus; abdomen excavated behind for the ovipositor; tarsal claws with strong tooth-like spines extending to apex.

Ten specimens from California, Washington, Colorado and Montana (type, coll. Amer. Ent. Soc.).

Monoblastus punctifrons n. sp.

♀.—8 mm. Head and thorax black; abdomen and legs rufous, posterior coxæ and trochanters piceous; large circular spot on front, mouth-parts and tegulæ,

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yellow; wings fuscous, but not deeply so, nervures and stigma brown; front, including clypeus, very coarsely and quite closely punctured; metathorax completely areolated; abdomen, including basal segment, broad, punctured, apex not excavated above; spurs on claws short and close and extending to apex.

One specimen from Texas (type, coll. Amer. Ent. Soc.).

Monoblastus varifrons Cress. (*Tryphon*), Trans. Amer. Ent. Soc. ii, 104, ♂.
Tryphon scutellaris Cress., ibid. 104, ♀.
Tryphon frontalis Cress., ibid. 109, ♀.
Tryphon dufresnii Prov., Faune Ent. Can. ii, 411, ♂.

♂ ♀.—5-7 mm. Head and thorax black; abdomen usually rufous with basal and apical segments black or piceous, but sometimes the whole abdomen, or nearly all, is piceous; legs vary from entirely pale rufous to rufous, with four anterior coxæ and trochanters yellowish white, or more or less of posterior coxæ black, and sometimes the trochanters and apex of tibiæ and tarsi of hind legs, dusky; face, including clypeus, mouth-parts, tegulæ, spot in front and almost always more or less of scutellums, yellow; occasionally the face is only partly yellow; antennæ brown; wings subhyaline, nervures and stigma brown; face finely punctured, and the clypeus has a slight impression between it and the front; metathorax completely areolated; abdomen slightly excavated behind for ovipositor; tarsal claws pectinate on basal two-thirds with strong short spurs.

Thirteen specimens from Canada, New Hampshire, Massachusetts, Connecticut, Michigan, Illinois (Dr. Nason), Montana and Florida (Mrs. Slosson). Type, coll. Amer. Ent. Soc..

Monoblastus aciculatus n. sp.

♂.—8 mm. Rufous, with thoracic sutures, anterior mesosternum and anterior and posterior metathorax, black; face, mandibles and tegulæ, yellow; antennæ rufous at base, dusky at apex; wings yellowish, subhyaline, nervures and stigma reddish brown; parapsidal grooves present; metanotum lacks the transverse basal carina; first two abdominal segments longitudinally aciculate; flagellum slightly enlarged in the middle; tarsal claws pectinate on basal half with strong sparse spurs.

One specimen from Montana (type, coll. Amer. Ent. Soc.).

POLYBLASTUS Hartig.

(Wiegemann's Archiv. f. Naturg., Jahrg. 3, H. 2, p. 155*a*, 158, 1837.)

Head transverse, inflated behind eyes, oval in front; eyes placed low and well in front; clypeus distinctly separated from the face by a deep groove, narrow, elliptical, and with small transverse ridge near the base, which is usually a dividing line in color also; antennæ moderately long. Thorax gibbous, pilose, polished, sparsely punctured; parapsidal grooves indicated anteriorly; scutellum broad, flat above and with lateral carinæ; metathorax rugosely punctured, completely areolated. Abdomen pilose, coarsely punctured at base, polished at apex, broad in middle, narrowed at base and apex; basal segment sessile, slightly widened at apex, carinæ present. Wings

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with a triangular, usually petiolate areolet; humeral cross nervure of hind wing broken below the middle. Legs slender, claws pectinate.

Posterior tibiæ black, with distinct pale annulus.
Abdomen black ..... **pedalis** Cress.
Abdominal segments 2 and 3 rufous.
Posterior coxæ rufous ..... **tibialis** Cress.
Posterior coxæ black ..... **varitarsus** Grav.
Posterior tibiæ without pale annulus; abdomen and coxæ black.
leviculus n. sp.

Polyblastus pedalis Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 273.

♂ ♀.—5-6.5 mm. Black, with clypeus, except extreme base, mouth-parts, tegulæ, and on hind legs broad annulus on basal middle of tibiæ, tibial spurs, and more or less of basal portion of tarsal segments white, remainder of posterior tibiæ and tarsi, black; rest of legs rufous; antennæ dark brown, paler beneath; wings subhyaline, nervures and stigma brown, pale at base; stigma broad, triangularly lanceolate; transverse median nervure unites slightly back of basal, strongly sloping backward and curved posteriorly; face pilose.

Thirteen specimens from Illinois, Michigan, New Hampshire, Colorado, Nevada, Washington, Mt. Hood, Oregon, So. California and Canada (type, coll. Amer. Ent. Soc.).

Polyblastus tibialis Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 280, ♂.
Tryphon annulipes Cress., Trans. Am. Ent. Soc. ii, 108, ♀.

♀ ♂.—5-7 mm. Black, with segments 2 and 3 and sometimes adjoining segments, ferruginous; clypeus, mouth-parts, tegulæ, four anterior coxæ, and all trochanters, lemon-yellow; upper middle annulus on posterior tibiæ and basal portion of tarsi white, rest of tibiæ and tarsi piceous to black; remainder of legs rufous; antennæ brown, paler beneath, yellowish in ♂; wings subhyaline, nervures and stigma brown, pale at base; stigma triangularly lanceolate; head and thorax pilose, face strongly so; in the ♂ type (*tibialis*) the petiole is piceous and pale rufous on the apical half; the ♂, as in corresponding species, is smaller.

Two specimens, Canada and Illinois (type, coll. Amer. Ent. Soc.).

Polyblastus varitarsus Grav. (*Tryphon*), Ichn. Europ. ii, 222, 146.

♂ ♀.—5-7 mm. Black, with abdominal segments 2-4 rufous; legs rufous (sometimes only the femora), four anterior ones, yellowish; trochanters, four anterior coxæ usually, broad annulus on upper tibiæ and basal portion of segments of posterior tarsi, white or yellowish white; hind coxæ, tibiæ and tarsi, black; clypeus, except extreme base, mouth-parts and tegulæ yellow or rufous; antennæ dark brown, reddish beneath; wings subhyaline, nervures and stigma brown, pale at base; stigma triangularly lanceolate; pilose, face strongly so; thorax and abdomen punctured.

Ninety-nine specimens from Montana, Colorado and Nevada.

Polyblastus leviculus n. sp.

♂.—5 mm. Black, with clypeus, mouth-parts and tegulæ, dirty yellowish brown; legs rufous, coxæ black, trochanters dusky; antennæ short, thickset, black, with small segment between scape and flagellum, yellow; clypeus black at base; wings hyaline, nervures and stigma reddish brown; areolet oblique

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petiolate; stigma lanceolate, the marginal nervure uniting on basal portion; metathorax and two basal segments of abdomen scabrous; basal segment sessile, but little widened at apex.

One specimen from Colorado (type, coll. Amer. Ent. Soc.).

SCOLOBATES Gravenhorst.

(Ichneumonologia Europæa, ii. 357, 1829.)

Polished, wings large and reaching beyond the apex of the abdomen, areolet wanting; antennæ large, filiform, longer than body. Legs moderate, hind tibiæ and basal part of hind tarsi thickened. Head large, subspherical and with emarginate vertex; clypeus spined at the tip. Metathorax without carinæ, spiracles oval. Abdomen sessile, short, subcompressed toward apex. Tarsal claws strongly pectinate. [This genus has until recently been placed with the Ophioninæ, but it shows much greater affinity here.]

Scolobates crassitarsus Grav., Ichn. Europ. ii, 360.

Prionopoda canadensis Harrington, Can. Ent. xxiv, 98.

♀.—8 mm. Head black, except face, mouth-parts and cheeks, which are ferruginous; thorax black; abdomen black, except venter and segments 2 and 3 above, which are rufous; coxæ, trochanters, base of femora, hind tarsi and their tibiæ except base black, rest of legs ferruginous; antennæ reddish brown; wings hyaline; the whole body is highly polished and covered with long brown pile.

Four specimens from Ottawa, Canada (Harr.), Franconia, N. H. (Mrs. Slosson), Philadelphia (Chas. Johnson) and Texas.

LATHROLESTES Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Polished, finely shagreened, pilose. Head somewhat inflated, excavated behind and without carina between vertex and occiput; clypeus separated, or partially so and elevated, apex rounded. Metathorax polished and without carina; parapsidal grooves indicated anteriorly. Abdomen subsessile, depressed in ♂, subcompressed toward apex in ♀; ovipositor plainly exserted, slender and curved upward. Legs rather slender; tibial spurs short; tarsi strongly pectinate toward base. Wings moderate, areolet present.

Lathrolestes nasoni n. sp.

♂.—6 mm. Black, with face, broad anterior orbital lines, mouth-parts, lower half of cheeks, pectus, posterior margin of prothorax, tegulæ, triangular spot on margins of mesonotum, lower mesopleuræ, narrow apical margins of four last abdominal segments and four anterior coxæ and trochanters, pale yellow; antennæ brown, yellowish beneath; legs rufous, with posterior tarsi and apex of their tibiæ dusky; wings hyaline, nervures and stigma brown, paler at base; stigma triangular, broad; areolet large, petiolate; head rather large and inflated behind the eyes; lateral basal corners of third abdominal segment rufous.

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♀.—What is perhaps the female of this species is rufous where the ♂ is yellowish on the sternum, pleuræ, mouth-parts and anterior legs; the face and cheeks are black; the tegulæ, point in front and line on margins of mesonotum are yellow and as in the ♂; the abdomen is also marked the same; the areolet is slightly smaller and the head not quite as large, otherwise as in the ♂.

One male from Algonquin, Ill., collected by Dr. Nason, after whom I take pleasure in naming the species, and one female from Montana (type, coll. G. C. D. and Amer. Ent. Soc.).

Lathrolestes similis n. sp.

♀.—5 mm. Head and notum of thorax black; abdomen and metathorax black with a rufous tinge; pleuræ and sternum piceous with paler spots; tegulæ, spot before and palpi yellow; clypeus and mandibles rufous; legs ferruginous; antennæ brown; wings hyaline, the tegulæ and areolet are quite as large as in the preceding species; the parapsidal grooves are very distinct and blend into a broad depression on disc of mesonotum.

One specimen from Colorado (Prof. C. P. Gillette). Type, coll. G. C. D.

Tribe TRYPHONINI.

1. Eyes plainly concave between antennæ.....***Ecclinops** Foer.
   Eyes not concave between antennæ.....2.
2. First segment of abdomen broadened ear-shaped at base on each side.
   Otoblastus Foer.
   First segment not or scarcely broadened ear-shaped at base on sides.....3.
3. Wings with an areolet.....4.
   Wings without an areolet, or with an incomplete one.....61.
4. Cubito-discoidal nervure broken with a tooth-like projection; metapleura projecting tooth-like immediately above the hind coxæ.
   ***Protarchus** Foer.
   Cubito-discoidal nervure rarely broken; metapleuræ not projecting tooth-like above hind coxæ.....5.
5. Areolet large, quite regular and almost rhombic.....6.
   Areolet very irregular, oblique, not rhombic.....7.
6. Segments 2 and 3 of abdomen with oblique impressions..***Dyspetes** Foer.
   Segments 2 and 3 without oblique impressions.....**Rhimphalea** Foer.
7. Second abdominal segment without thyridia (small glabrous spots or depressions) at base.....8.
   Second segment with distinct thyridia at base.....23.
8. Second abdominal segment with a sharp ridge at base which extends to the spiracles.....**Eryma** Foer.
   Second segment without ridge to spiracles.....9.
9. Metanotum without areolets.....10.
   Metanotum more or less areolated.....12.
10. Spiracles of first abdominal segment somewhat projecting; no ridge extends from them to the apex.....11.
    Spiracles of first abdominal segment not projecting, and a sharp ridge extends from them to apex.....**Erigloea** Foer.

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11. Metapleura separated from the notum by a distinct carina; humeral cross-nervure broken below the middle.....**Labrossyta** Foer
Metapleura without carina between it and notum; humeral cross-nervure broken far below the middle.....***Polytrera** Foer.
12. Humeral cross-nervure straight, not distinctly broken.....***Gnesia** Foer.
Humeral cross-nervure plainly angularly broken.....13.
13. Humeral cross-nervure broken above the middle.....14.
Humeral cross-nervure broken at or below the middle.....15.
14. Clypeus not plainly separated at base by an elevated margin; superior median area of metathorax wanting.....***Udenia** Foer.
Clypeus plainly separated by an elevated margin.....**Otlophorus** Foer.
15. Metanotum completely areolated.....16.
Metanotum not completely areolated.....18.
16. Spiracles of segment 1 lie somewhat back of the middle.
***Hodostates** Foer.
Spiracles lie in front of or at the middle of segment 1.....17.
17. Abdominal segments 2 and 3 broader than long; humeral cross-nervure broken below the middle.....**Trematopygus** Holmgr.
Abdominal segments 2 and 3 not plainly broader than long; humeral cross-nervure broken at the middle.....***Synagrypnus** Foer.
18. Clypeus not separated at base by an elevated margin.....19.
Clypeus separated at base by an elevated margin.....20.
19. Mesonotum with distinct parapsidal furrows in front; longer spur of hind tibiæ not half as long as heel segment.....**Homobia** Foer.
Mesonotum without parapsidal furrows; longer spur of hind tibiæ more than half of the heel segment.....***Zemiophora** Foer.
20. A sharp ridge extends from spiracles to apex of basal abdominal segment.21.
No sharp ridge from spiracles to apex.....***Amorphoguathon** Foer.
21. Antennæ swollen above middle and with segments broader than long and verticillate at apex of each.....**Baryceros** Prov.
Antennæ slender, not strongly verticillate.....22.
22. Petiole of abdomen slender, longer than broad.....**Synœcetes** Foer.
Petiole of abdomen triangular, as broad as long.....**Westwoodia** Prov.
23. Clypeus distinctly divided by a nearly median elevation, front half somewhat flattened and somewhat sloping (usually differently colored than the base).....24.
Clypeus without plain transverse median ridge.....32.
24. Front above antennæ with a strong tooth; face elongate.....25.
Front without strong projecting tooth.....26.
25. Projecting tooth concave above; spiracular grooves at sides of clypeus beset with long hairs.....***Cœloconus** Foer.
Projecting tooth not or but slightly concave; clypeal grooves not beset with long hairs.....**Cosmoconus** Foer.
26. Metanotum not regularly areolated, but with carinæ.....27.
Metanotum more or less perfectly areolated.....28.
27. Metanotum polished, transverse carina wanting; longitudinal carinæ strong, sharp and well defined.....**Quadrigana** Davis.
Metanotum smooth and provided with a prominent transverse apical ridge.
***Psilosage** Foer.

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28. Edge of antennal grooves elevated.....29.
Edge of antennal grooves not elevated.....30.
29. Upper edge of antennal grooves raised.....*Otitochilus Foer.
Inner edge of antennal grooves raised.....*Symbœthus Foer.
30. Clypeus with two small teeth at apex.....*Neleges Foer.
Clypeus not as above.....31.
31. Teeth of mandibles of equal length; thyridia distinct....Tryphon Grav.
Lower tooth of mandibles the longer; thyridia small and indistinct.
*Polyrhysia Foer.
32. Humeral cross-nervure broken above the middle.....33.
Humeral cross-nervure broken at or below the middle.....38.
33. Basal segment of abdomen with four strong tubercles back of the middle.
*Narcopœa Foer.
Basal segment without tubercles back of middle.....34.
34. Lower tooth of mandibles longer than upper.....35.
Lower tooth not longer than upper; clypeus impressed, or with a marginal front edge.....36.
35. Metanotum without superior or apical median areas; clypeus with a small cross-furrow close to the front edge, which is raised and small.
*Isodiæta Foer.
Metanotum with an apical median area which is divided by a median carina; clypeus without cross-furrow.....*Neales Foer.
36. Clypeus much impressed from the base and hollowed dish-shaped.....37.
Clypeus sloping back of middle, transversely impressed in front; the front is strongly and broadly elevated, emarginate medially; segment 1 smaller at base than between the spiracles, from these a ridge extends to apex; apical area with sharp carinæ.....Zacalles Foer.
37. Segment 1 not broader at the outer base than between the spiracles, and from there a fine ridge extends to the tip; antennæ with white annulus.
*Perispuda Foer.
Segment 1 broader at outer base than between the spiracles; no ridge from spiracles to apex.....*Zaplethis Foer.
38. Mandibles truncate at tip and without teeth.....*Alcochera Foer.
Mandibles plainly toothed at apex.....39.
39. Areolet not petiolate.....40.
Areolet plainly petiolate.....42.
40. Areolet neither plainly petiolate nor sessile.....41.
Areolet plainly sessile; mesonotum with deep parapsidal furrows anteriorly.
Apimeles Foer.
41. Mesonotum with short parapsidal furrows anteriorly; clypeus not broader than long; head transverse; humeral cross-nervure broken at about the middle; lunulæ on segments 2 and 3 very plain.
*Læpserus Foer.
Mesonotum without parapsidal furrows; clypeus broader than long; head not transverse; humeral cross-nervure broken far below the middle.
Epachthes Foer.
42. Segment 3 longer than broad.....*Lagarotis Foer.
Segment 3 not distinctly longer than broad.....43.
43. Mesopleura with a projecting tooth to the back and below.*Daspletis Foer.
Mesopleura without posterior projecting tooth.....44.

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44. Metanotum without areolets.....45.
Metanotum more or less areolated.....49.
45. Lower tooth of mandibles much longer than upper.....*Azelus Foer.
Lower tooth of mandibles not longer than upper.....46.
46. Humeral cross-nervure broken at or a little above (seldom a little below) the middle.....47.
Humeral cross-nervure broken plainly below the middle..*Adranes Foer.
47. Segment 4 plainly shorter than the third.....48.
Segment 4 fully as long as 3.....*Zaphthora Foer.
48. Clypeus flat, slightly rounded at apex, nearly truncate and without elevated front margin; segments 2 and 3 without an arched side ledge.
Adexioma Foer.
Clypeus transversely impressed before apex and with median and lateral apical emarginations; segment 2 with distinct arched ledge at side: spiracles not close to lateral margin.....Lamachus Foer.
49. Metanotum entirely areolated.....50.
Metanotum not entirely areolated.....52.
50. Last member of hind tarsi not (?) longer than third.
*Trophoctonus Foer.
Last member of hind tarsi not (?) longer than third.....51.
51. Clypeus with transverse impression before apex.....*Synomelix Foer.
Clypeus without transverse impression before apex..*Gastroporus Foer.
52. Clypeus compressed and drawn forward to a more or less distinct tooth.
*Panforhæstes Foer.
Clypeus not compressed so that the middle projects tooth-like.....53.
53. Clypeus forming a flat triangle whose broadest side is the front edge.
*Zapedias Foer.
Clypeus not forming a flat triangle.....54.
54. Segment 1 with two keel-like carinæ which extend beyond the spiracles.
Dialges Foer.
Segment 1 without carinæ, or they do not extend beyond the spiracles....55.
55. Front with a median furrow; second and following segments are smooth.
*Zemiophron Foer.
Front without median furrow; second and following segments not all smooth.....56.
56. Clypeus transversely impressed before apex so that the front edge appears elevated.....57.
Clypeus without transverse impression before the apex, and therefore the front edge has no margin.....58.
57. Stigma very small, radius starting from basal third; base of discoidal cell fully twice as broad as the transverse median nervure.
*Oneista Foer.
Stigma rather small, radius starting from or somewhat in front of the middle (never from basal third); base of discoidal not twice as broad as the transverse median nervure.....*Bysantes Foer.
58. Middle of face and clypeus arched; the front with more or less of a shield-like elevation.....Nœmon Foer.
Middle of face and clypeus not arched; second abdominal segment quadratic.....59.

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59. Longer spur of hind tibiæ half as long as heel segment; segment 3 of hind tarsi much longer than 5.....60.
Longer spur not equal to half of heel segment; segment 3 of hind tarsi scarcely longer than 5.....*Paraplesius Foer.
60. Basal abdominal segment with a very deep longitudinal furrow; posterior median area very broad and with median carina; mesonotum and scutellum much punctured, but otherwise smooth.
*Trysicampe Foer.
Basal segment without longitudinal furrow; posterior median area short, small and without median carina; mesonotum and scutellum shagreened and punctured.....*Nythophona Foer.
61. Middle femur with a few teeth at base on lower side..*Aeolometis Foer.
Middle femur without teeth on under side.....62.
62. Posterior trochanter with a strong, blunt, projecting tooth beneath base of femur; third discoidal cell broad; clypeus scarcely separated from face; ovipositor curved upward.....Volucris Davis.
Posterior trochanter without tooth beneath.....63.
63. Segment 2 without thyridia at base, or they lie very close to the base and are quite invisible.....64.
Segment 2 with plain thyridia.....80.
64. Humeral cross-nervure broken above the middle.....65.
Humeral cross-nervure broken at or below the middle.....66.
65. Mesonotum trilobed; area supero-media shorter than the postero-media; humeral cross-nervure broken but little above the middle.
*Polypystis Foer.
Mesonotum not divided; area supero-media longer than the postero-media; humeral cross-nervure broken far above the middle.
*Xenonastes Foer.
66. Metanotum entirely areolated.....Sychnoportus Foer.
Metanotum not entirely areolated.....67.
67. Ridge of vertex broken in the middle.....†*Asthenara Foer.
Ridge of vertex not broken in the middle.....68.
68. Base of discoidal cell not as broad as transverse median nervure.
†*Camporychus Foer.
Base of discoidal cell as broad as, or broader than transverse median nervure.....69.
69. Areolet not quite wanting, but half open at apex.....70.
Areolet usually entirely wanting.....71.
70. Transverse median nervure uniting before basal; base of discoidal cell only twice as broad as transverse median nervure; areolet very small; spiracles of segment 1 lying in or back of middle.
*Trapezocora Foer.
Transverse median nervure uniting far back of basal; base of discoidal cell at least three times as broad as the transverse median nervure; areolet very large, short petiole, wide open; spiracles lying in front of the middle.....*Rhigelus Foer.
71. Clypeus emarginate, almost semicircular on front edge..Cacotropa Foer.
Clypeus not so emarginate.....72.
72. Metanotum not areolated.....73.
Metanotum more or less areolated.....74.

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73. Spiracles of segment 1 strongly projecting; segment 2 has very distinct lunulæ; metasternal ridge wanting; apical member of hind tarsi hardly longer than the fourth, but plainly shorter than the third.
***Philotymma** Foer.

Spiracles of segment 1 not projecting; segment 2 without lunulæ; marginal ridge of metasternum only partly wanting; apical member of hind tarsi decidedly longer than the fourth and as long as the third.
***Scopesis** Foer.

74. Segment 1 without carinate margin from spiracles to apex.
Syndipnus Foer.

Segment 1 with carina from spiracle to apex..... 75.

75. Posterior median area with a middle carina.....76.

Posterior median area without a middle carina.....77.

76. Teeth of mandibles of equal length.....**Listrota** Foer.

Teeth unequal, lower tooth longer.....***Tiemon** Foer.

77. First and second pleural areas of metathorax not separated by a transverse carina.....**Polyterus** Foer.

First and second pleural areas separated by a transverse carina.....78.

78. Front margin of clypeus with a fine, narrow elevation....***Atrestes** Foer.

Front of clypeus without elevated margin.....79.

79. Transverse median nervure uniting before the basal; base of third discoidal cell twice as broad as transverse median nervure.
***Campogenes** Foer.

Transverse median nervure uniting far back of basal; base of third discoidal cell three times as broad as transverse median nervure.
***Aselasma** Foer.

80. Metanotum entirely areolated.....81.

Metanotum not entirely areolated.....84.

81. Clypeus flatly deepened, dish-shaped, in the middle.
***Pantoporthus** Foer.

Clypeus not deepened dish-shaped in the middle.....82.

82. Terminal segment of hind tarsi longer than the third.
***Campoporus** Foer.

Terminal segment of hind tarsi shorter than the third.....83.

83. Longer spur of hind tibiæ longer than half of heel segment.
***Syntactus** Foer.

Longer spur of hind tibiæ scarcely one-third the length of heel segment; antennæ 26-jointed.....**Caliphrurus** Foer.

84. Clypeus with two tooth-like projections at apex.....**Bœthus** Foer.

Clypeus without teeth at apex.....85.

85. Abdomen strongly compressed, long.....***Saotis** Foer.

Abdomen more or less slightly compressed at apex.....86.

86. Stigma much lengthened and pointed, longer than marginal cell.
***Tromopœa** Foer.

Stigma not longer than marginal cell.....87.

87. Areolet not entirely wanting, partly open on outer nervure.....88.

Areolet entirely wanting.....89.

88. Metanotum areolated; clypeus much impressed from both sides at tip.
Atithasus Foer.

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Metanotum not areolated; clypeus not impressed at tip and without elevated margin ..... *Hybristes Foer.

89. Mandibles without teeth ..... *Exacrodus Foer.
Mandibles toothed ..... 90.

90. Lower tooth of mandibles longer than upper ..... 91.
Lower tooth of mandibles as short as upper ..... 92.

91. Clypeus with a transverse impression at the tip; longer spur of hind tibiæ more than half as long as the heel segment. *Tachyporthus Foer.
Clypeus without apical impression, anterior margin not elevated; longer spur of hind tibiæ not half as long as heel segment of tarsi. *Hyperallus Foer.

92. Apical segment of hind tarsi as long as the third, or but little shorter .... 93.
Apical segment of hind tarsi shorter than the third ..... 95.

93. Segments 3 and 4 are narrower at apex than base .. †*Hyperbatus Foer.
Segments 3 and 4 of equal width at base and apex ..... 94.

94. Clypeus transversely impressed before apex; hind tarsi a little longer than the tibiæ ..... †*Scoparches Foer.
Clypeus without transverse impression before apex; hind tarsi are somewhat shorter than tibiæ ..... †*Gemophaga Foer.

95. Base of discoidal cell shorter than transverse median nervure ..... 96.
Base of discoidal cell as long or longer than transverse median nervure .. 97.

96. Second recurrent nervure starting far back of the cubital; segment 1 without deep longitudinal furrows beside the spiracles ... †*Allocritus Foer.
Second recurrent nervure and the cubital almost interstitial; segment 1 with a deep longitudinal furrow beside the spiracles ... †*Enœcetis Foer.

97. Distance between mandibles and eyes is greater than the basal width of mandibles; longer spur of hind tibiæ scarcely more than a third the length of basal member of hind tarsi ..... *Synodites Foer.
Distance between mandibles and eyes is less than the basal width of mandibles ..... 98.

98. Segments 1-3 more or less rugose ..... 99.
Segments 1-3 not rugose ..... 101.

99. Segments 1 and 2 with a transverse impression ..... Spudæa Foer.
Segments without transverse impressions ..... 100.

100. Humeral cross-nervure broken at the middle; posterior median area without middle carina; clypeus much impressed at apex from both sides; segment 2 without a margin beside thyridia; dorsal carina disappearing at base on basal segment ..... *Rhinotorus Foer.
Humeral cross-nervure broken a little below the middle: posterior median area with a sharp middle carina; segment 2 has a shortened lateral margin beside the thyridia; sole of hind tarsi quite long and hairy; dorsal carinæ of basal segment much elevated. Camponastes Foer.

101. Segment 1 more than twice as broad at apex as at base ..... 102.
Segment 1 not more than twice as broad at apex as base ..... 103.

102. Clypeus not flattened from base; second recurrent and cubital nervures nearly interstitial ..... *Tautozelus Foer.
Clypeus much flattened from base ..... *Hypamblys Foer.

103. Clypeus with slight transverse impression before apex; apical edge with elevated margin and covered with a stiff row of bristles. Phæstus Foer.
Clypeus without transverse row of bristles on front edge ..... 104.

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104. Incisions between segments 1-3 very deep; clypeus much impressed from sides on front edge ..... ***Phagesorus** Foer.
Incisions not deep; clypeus without lateral impressions ..... 105.
105. Mesonotum, scutellum and segments 1-3 not shagreened.
***Sarcorychus** Foer.
Mesonotum, scutellum and segments 1-3 shagreened ..... 106.
106. Ridge of vertex broken in middle ..... ***Apystus** Foer.
Ridge of vertex not broken in middle ..... 107.
107. No lateral carina from spiracles to apex on basal abdominal segment.
***Dolioctonus** Foer.
Lateral carina from spiracles to apex present ..... 108.
108. Metanotum without carina; antennæ with pale annulus.
***Barytarbes** Foer.
Metanotum with more or less distinct carinæ ..... 109.
109. Basal segment of hind tarsi inflated; tibial spur not half as long.
Holmgrenia Foer.
Basal segment of hind tarsi not inflated ..... 110.
110. Mesonotum not shagreened ..... †***Lathrophagus** Foer.
Mesonotum finely and opaquely shagreened ..... 111.
111. Clypeus with lateral transverse impressions more or less distinct and the front edge has a more or less distinct elevated margin.
†***Campodorus** Foer.
Clypeus more or less transversely impressed at sides of anterior margin, and the margin by this means is elevated and centrally more or less deeply emarginate ..... **Mesoleius** Holmg.

OTOBLASTUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Small, slender species, with the abdomen more or less compressed in the ♀ beyond the second segment; basal segment broadly sessile, depressed, subrectangular, the basal portion broadened, ear-like laterally. Head small, transverse, slightly narrowed beneath, tuberculate beneath antennæ; clypeus small, apically impressed, and with median apical emargination. Thorax polished, parapsidal grooves wanting; metathorax oval, rugose, transverse carinæ wanting. Abdomen rugosely punctate at base and without distinct dorsal carinæ. Legs strong, coxæ short. Wings elongate, areolet wanting, stigma triangular, marginal cell strongly triangulate. The following species of this genus bear a close resemblance to the Bassini, lacking only the tridentate mandibles.

Abdomen black; sternum and most of scutellum yellow ..... **bidens** n. sp.
Abdomen partly rufous.
Face and median spot and lateral margins of mesonotum yellow.
Hind coxæ and most of abdomen rufous ..... **compressiventris** Cress.
Hind coxæ yellow; abdomen piceous, third segment rufous.
minimus Cress.

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Face and mesonotum without yellow markings.....**cultiformis** n. sp.
Face yellow; abdomen with median transverse black bands; mandibles without distinct teeth.....**erodens** n. sp.

Otoblastus bidens n. sp.

♂.—5 mm. Black, with face, scape beneath, mouth-parts, cheeks, prothorax except dorsum, mesosternum, lower pleuræ, tegulæ, cuneiform line on margins of mesonotum, scutellums except central dot on the mesothorax, coxæ, trochanters and central annulus on hind tibiæ, yellowish white; remainder of legs pale honey-yellow except hind tibiæ, which are dusky: wings hyaline, iridescent, nervures and stigma yellowish brown; head and mesothorax broad.

Two specimens from Agricultural College, Michigan (type, coll. G. C. D. and College).

Otoblastus compressiventris Cress. (*Tryphon*), Tr. Am. E. S. ii, 105.

♀.—5 mm. Head and thorax black, with median spot on face, clypeus, mouth-parts, tegulæ, spot in front, spot beneath primary and secondary wings, triangular spot on margins of mesonotum, four anterior coxæ and trochanters, lemon-yellow; remainder of legs honey-yellow; abdomen rufous, black on two or three apical segments and on most of basal; antennæ brownish red; wings hyaline; ovipositor exserted, straight; abdomen strongly compressed toward apex.

♂.—The single specimen, which probably belongs to this species, differs in having the entire face, antennæ beneath, spot on cheeks beneath and stripe on anterior mesopleuræ, yellow; abdomen piceous, reddish on segments 2 and 3; posterior coxæ black, yellow at apex.

Six specimens from Massachusetts, Canada, Colorado and South Haven, Mich. (types, coll. Amer. Ent. Soc.).

Otoblastus minimus Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 281.

♀.—3.5 mm. Differs from *compressiventris* in being smaller, in having the abdomen scarcely compressed, in having the hind coxæ yellow and the abdomen except the third segment piceous.

Type from Illinois; coll. Amer. Ent. Soc.

Otoblastus cultiformis n. sp.

♀.—6 mm. Head and thorax black, abdomen piceous, with apical half of segment 2 and narrow apical margin of 3, rufous; legs rufous; clypeus, mouth-parts, tegulæ and point in front, yellow; antennæ brown; wings hyaline, cubito-discoidal vein broken; metathorax with apical median area large and with distinct median carina.

One specimen from Colorado (type, coll. Amer. Ent. Soc.).

Otoblastus erodens n. sp.

♂ ♀.—5 mm. Black; face, anterior orbital lines, antennæ beneath, mouth-parts, tegulæ, spot in front and beneath, lateral margins of mesonotum, anterior and posterior margins of mesopleuræ, trochanters and four anterior coxæ pale yellow; the ♂ has the spots more largely developed, and in addition has the pectus, sternum and posterior coxæ yellow; abdomen piceous to black, with segments 3 and 4 rufous, or yellowish red, with median, transverse, dusky bands; apex of segments 2 and 4 rufous, thyridia rufous; legs honey-yellow, posterior coxæ of ♀ black and yellow; wings large and hyaline, nervures and stigma brown; mandibles without distinct teeth; abdomen subcompressed, elongate.

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Three specimens from Wyoming and Colorado (types, coll. G. C. D. and Amer. Ent. Soc.).

RHIMPHALEA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Rhimphalea brevicorpa n. sp.

♀.—7 mm.; antennæ 8 mm.; hind legs 9 mm. Head, pro- and mesothorax black, metathorax black at base and with broad black stripe extending back along the dividing line between pleura and notum: posterior tibiæ except apical segment, annulus on antennæ, clypeus except basal portion, base of mandibles, collar on prothorax, tegulæ, spot in front, spot beneath, large triangular spot on margins of mesonotum and scutellums, yellowish white; apex of posterior tibiæ and apical segment of posterior tarsi blackish; antennæ black below annulus, reddish brown above; the remainder of the body rufous; wings hyaline, nervures and stigma brown; areolet large, four sided, petiolate; stigma long, slender, lanceolate; marginal cell long, narrow; second recurrent nervure broken and with a stub nervure extending apically; humeral cross-nervure broken far above middle; wings longer than abdomen; head, thorax and coxæ very coarsely punctured; abdomen highly polished and without puncture or shagreen; face triangular, being much narrowed beneath, eyes large and placed mostly outside the head; clypeus narrow, elliptical, scarcely separated from face and with transverse ridge above middle; antennæ long, slender; ocelli widely separated; mesothorax strongly gibbous, no parapsidal grooves; metathorax without carina, except the one forming a small apical median area, lateral apical portion projecting broadly over hind coxæ; abdomen very short but strong, smooth; ovipositor short, slightly exserted; basal segment sessile, somewhat broader at apex, without carinæ, but with median groove; when viewed laterally the basal segment appears arched on basal third and again at apex, with a transverse depression between; legs very long and slender; posterior femora reach considerably beyond apex of abdomen.

One specimen from Algonquin, Ill. (Dr. W. A. Nason). Type, coll. G. C. D.

ERYMA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Eryma pilosa n. sp.

♂.—7 mm. Entire body, including legs and margin of wings, covered with fine, moderately long gray pile; head, thorax, antennæ, coxæ, trochanters, petiole except apex and two apical abdominal segments, black; palpi and tegulæ yellowish; tarsi and apex of tibiæ on hind legs dusky; remainder of legs and abdomen rufous; wings subhyaline, nervures and stigma dark brown; areolet petiolate, oblique; transverse median nervure uniting back of the basal; nervure above third discoidal cell bent at nearly right angles; humeral cross-nervure of hind wing broken below the middle; body polished, rather coarsely but not closely punctured; face flat and coarsely punctured, clypeus scarcely elevated, coarsely punctured and broadly rounded at apex; parapsidal grooves wanting; scutellum broadly rounded and with carinate margin; metathorax completely areolated; abdomen broadly oval and even above except slight oblique depressions at base of second segment, petiole broad, gradually widened, oval and carinate above; carina leading to the spiracles on second segment, prominent, distinct.

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Three specimens from Montana and Massachusetts (types, coll. Amer. Ent. Soc. and Davis).

ERIGLŒA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Body opaque because of being so closely shagreened, least so on upper pleuræ and apical abdominal segments. Head transverse, clypeus transverse, elevated, somewhat depressed at apex; parapsidal grooves indicated; scutellum elevated, oval; metathorax finely scabrous, carinæ wanting, or with faint longitudinal ones. Abdomen depressed, broadly oval, smooth; petiole broad, gradually widening, spiracles and carinæ not prominent; apex of abdomen in ♀ excavated beneath. Wings with an areolet.

Antennæ, stigma and petiole of abdomen broad and short ....**opulenta** n. sp.
Antennæ and stigma slender, petiole moderately so.....**excavata** n. sp.

Eriglœa opulenta n. sp.

♀.—6 mm. Head and thorax black; legs, antennæ and abdomen rufous; scape beneath, large rectangular spot on face, clypeus, mouth-parts, tegulæ, trochanters and four anterior trochanters, yellow; front with a small tubercle beneath the antennæ; antennæ short, thick and tapering; thorax broad, metathorax with faint longitudinal carinæ; abdomen broad, excavated beneath at apex; basal segment broad with faint carinæ at base, spiracles small and located in the lateral carina; wings subhyaline, nervures brown, stigma thick, brown, paler on basal half; transverse median nervure uniting considerably back of the basal.

One specimen from New Hampshire (type, coll. Amer. Ent. Soc.).

Eriglœa excavata n. sp.

♀.—7–8 mm. Head and thorax black, with anterior orbital lines, clypeus, mouth-parts, scape beneath, tegulæ, spot in front, another beneath and triangular line on margin of mesonotum, yellow; legs and abdomen beyond basal segment rufous; petiole varies from black to dusky rufous; antennæ brownish red, slender, as long as body; wings hyaline, iridescent, nervures and stigma pale brown, the latter slender, lanceolate; transverse median and basal nervures interstitial; face broad, flat; antennæ considerably separated at base; metathorax without carinæ except a faint one beneath the spiracles; abdomen broadest near apex, excavated beneath at apex; ovipositor slightly exserted; petiole moderately broad, rather narrow at base, faint carinæ at base above, spiracles slightly above the lateral carina.

Three specimens from Montana and Massachusetts (type, coll. Amer. Ent. Soc. and Davis).

LABROSSYTA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Labrossyta frontosa n. sp.

♀ ♂.—6 mm. Black, with abdomen, except petiole, and legs, except hind coxæ, rufous; in ♀ the clypeus, mouth-parts, scape beneath, tegulæ and spot in front are yellow; in addition to this the ♂ has the face, anterior orbital lines, cheeks

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beneath and a hooked line on margin of mesonotum yellow; antennæ reddish, brown; wings subhyaline, iridescent, nervures and stigma brown, paler at base: stigma thick, triangular; areolet large, triangular, nearly sessile; transverse median nervure uniting back of the basal; humeral cross-nervure in hind wing broken very low; head transverse, front broad; clypeus transverse, somewhat depressed at apex; thorax polished, pilose, sparsely punctured; no parapsidal grooves; scutellum small, oval; metathorax oval, polished and without carina, except beneath spiracles; abdomen pilose, closely and rather coarsely punctured; ovipositor exserted; petiole thick, oval, slender at base and with faint groove above.

Four specimens from Colorado, Nevada, Washington and Idaho (Prof. Aldrich). Type, coll. Davis and Amer. Ent. Soc.

Labrossyta bimaculatus Ashm. (*Grypocentrus*). Tr. A. E. S. xxiii, 199.

♀ (?)—9 mm. Black, with sides of face continued onto clypeus, mouth-parts, tegulæ, spot in front, most of trochanters, four anterior tibiæ and tarsi, posterior tibiæ except apex and heel segment of hind tarsi at base, white; apex of posterior femora, tibiæ and the tarsi black, rest of legs rufous; wings hyaline, nervures and stigma brown, stigma lanceolate, areolet petiolate very oblique; abdomen and metathorax coarsely shagreened, head and metathorax punctured and finely shagreened.

Type from New Hampshire (coll. Ashm.).

OTLOPHORUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Otlophorus innumerabilis n. sp.

♀ ♂.—4-8 mm. Black, abdomen rufous with petiole black, sometimes second and apical segments dusky in ♂; legs rufous, coxæ and sometimes trochanters, and tibiæ and tarsi of hind legs in ♂ dusky, tibiæ at apex and hind tarsi in ♀ slightly dusky: apical half of clypeus, mouth-parts and tegulæ, rufous; antennæ black in ♂, reddish brown in ♀; wings subhyaline, nervures and stigma brown, paler at base; areolet oblique, petiolate; transverse median nervure interstitial with basal; humeral cross-nervure of hind wing broken much above the middle; head disc-shaped, slightly elongate toward the mouth; face flat, pilose; clypeus not strongly elevated on transverse median carina, upper half black, punctured, lower half polished, rounded at apex; thorax punctured and polished; no parapsidal grooves; scutellum flat, sloping forward, triangular and margined with a carina except anteriorly; metanotum completely areolated: abdomen finely pilose, polished, smooth; ovipositor ventral, guides broad; petiole thick, moderately broad, scarcely narrowed at base, carinæ reaching nearly to apex.

Seventy specimens from Colorado, Montana, South Dakota, Idaho (Prof. Aldrich), Nevada, Washington, Oregon, Southern California and Mt. Washington, N. H. (Mrs. Slosson).

Var. **feria** n. var.—Differs from *innumerabilis* by having the coxæ pale rufous or yellow in ♂, and without black on the abdomen except on the basal segment.

Two females and three males from New Hampshire, New York and Michigan (types, coll. Am. E. S., Davis and Mich. Ag. Coll.).

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TREMATOPYGUS Holmgren.

(Mon. Tryphonidum Sueciæ 179, 1856.)

Body rather broad and short, pilose, polished, and finely punctured; head transverse; face flat, slightly swollen beneath antennæ; clypeus flat, usually rounded at apex. Thorax broad; parapsidal grooves more or less indicated; metathorax completely areolated and usually scabrous; scutellum small, oval. Abdomen thickset and broadly oval; ovipositor short, petiole broad, with carinæ usually on basal portion. Legs strong, femora slightly incrassate. Wings with triangular areolet; second recurrent nervure but slightly bent; humeral cross-vein of hind wing broken below the middle.

Wings fuscous; abdomen rufous..... .....**fusculosus** n. sp.
Wings hyline, or subhyaline.
Abdomen black; clypeus depressed at apex.....**rotundatus** n. sp.
Abdomen in part rufous; clypeus not depressed at apex.
Posterior tibiæ white, black at apex.....**signatipes** Cress.
Posterior tibiæ rufous, dusky at apex.....**scutellatus** Ashm.

Trematopygus fusculosus n. sp.

♂.—5 mm.: antennæ 4.5 mm. Black, with abdomen and legs rufous; posterior coxæ and base of petiole somewhat black; four anterior coxæ, trochanters, mandibles, palpi and tegulæ whitish; wings fuscous, iridescent, broad at apex; nervures and stigma brown; stigma thick, triangular; transverse median nervure unites back of basal; cubito-discoidal nervure strongly arched; head and thorax polished, finely punctured; mesonotum with a median depression; carinæ on petiole of abdomen reach nearly to apex.

Three specimens from Agricultural College, Michigan; taken June 25th (types, College and Davis collections).

Trematopygus rotundatus n. sp.

♀ ♂.—5 mm. Black, with clypeus, mouth-parts, scape beneath, tegulæ, spot in front, trochanters, four anterior coxæ and venter, except at apex, yellow; legs pale rufous, with coxæ, tarsi and apex of tibiæ of hind legs dusky; wings hyaline, nervures and stigma brown; stigma thick, deep, and rounded in inner margin: areolet minute, petiolate; transverse median nervure unites back of basal; face strongly pilose and coarsely shagreened; clypeus transverse, depressed at apex: thorax polished, mesonotum coarsely shagreened and subopaque, parapsidal grooves widely separated and not uniting; abdomen polished: carinæ on petiole in ♂ strong, in ♀ faint; petiole curved above.

Two specimens, New Hampshire and Agricultural College, Michigan, June 13th (types, coll. College and Am. Ent. Soc.).

Trematopygus signatipes Cress. (*Tryphon*), Tr. Am. Ent. Soc. ii, 105.

♀.—5 mm. Black; clypeus, two spots above and mouth-parts, yellowish white; tegulæ, four anterior tarsi and tibial spurs and basal two-thirds of hind tibiæ, white; tarsi, apex of femora and apical third of tibiæ on hind legs, black; remainder of legs and second abdominal segment rufous: wings hyaline, iridescent, nervures and stigma broadly lanceolate; areolet petiolate; basal and transverse

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median nervures nearly interstitial; head shagreened, opaque, pilose; front with small tubercle beneath antennæ; clypeus flat, rounded at apex; abdomen broadest on segments 2 and 3, subcompressed at apex; ovipositor exserted; petiole slender at base, rapidly widened on posterior half; carinæ extend to apex.

One specimen from Hudson Bay, Canada (type, coll. A. E. S.).

Trematopygus scutellatus Ashm. (*Prionopoda*), Pr. U. S. N. M. xii, 441.

♀.—6 mm. Fulvo-ferruginous with spot enclosing ocelli, dorsum of thorax, except scutellum, and basal segment of abdomen dark piceous; posterior tarsi and apex of their tibiæ dusky; antennæ reddish brown; wings hyaline, areolet triangular, incomplete, entire body finely shagreened, not punctured; basal segment of abdomen without distinct carinæ.

One specimen from Washington, D. C. (type, coll. U. S. N. Mus.).

HOMOBIA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Homobia cinctiventris Ashm. (*Colpotrochia*), Tr. Am. Ent. Soc. xxiii, 200.

♀.—11 mm. Black, pilose, with mouth, spot above clypeus, tegulæ, spot before, line beneath, four anterior tibiæ and tarsi and long stripe on outer posterior tibiæ white; posterior femora piceous; posterior tarsi and remainder of tibiæ black; rest of legs rufous; head and thorax closely punctured, abdomen polished; clypeus transverse, not separate, deeply impressed at apex; mesonotum trilobed anteriorly, metathorax with distinct areas on apical portion; abdomen elongate, petiole slightly widened behind spiracles and with dorsal carinæ; wings hyaline, areolet petiolate; legs long, rather slender.

Type from Massachusetts and in coll. of Ashmead.

BARYCEROS Provancher.

(Le Naturaliste Canadien, vii, 269, 1875.)

Head transverse, slightly inflated; clypeus separated, elliptical; antennæ short, slender at base, thickened and somewhat flattened on second apical third; segments verticillate on apical edge, long at base; parapsidal grooves deep and uniting in a depression before the scutellum; metathorax with longitudinal carinæ. Abdomen depressed, petiolate; basal segment arched and strongly carinate; areolet of wings small, oblique, petiolate. This name is an old one used by Gravenhorst, and will probably need to be changed.

Baryceros rhopalocerus Prov. (*Mesoleptus*), Faune Ent. Can. ii, 405.

♂.- 8 mm. Head and thorax black, abdomen and legs rufous; face, scape beneath, mouth-parts, cheeks at base of mandibles, tegulæ, trochanters and four anterior coxæ, yellowish white; antennæ pale rufous with apical fourth dark brown; basal segment of abdomen and apex of posterior femora and tibiæ more or less black, apex of abdomen also sometimes dusky; wings subhyaline, nervures and stigma brown, paler at base; stigma thick, lanceolate; areolet oblique, petiolate; head shagreened, face oval; clypeus flat, broadly rounded at apex; thorax polished and pilose; abdomen elongate, depressed, broadly oval, polished beyond middle of second segment; petiole curved, rather slender at base, con-

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siderably broadened beyond the spiracles, carinate, longitudinally aciculate on post-petiole and basal half of segment 2; claws with a few long teeth near the base.

Two specimens from New York and Georgia (Canada, Prov.). This species may belong to the Ctenopelminii. More material is needed to determine its exact location (type, coll. Quebec Museum).

SYNŒCETES Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Head transverse; face oval, densely covered with silvery pile, clypeus elevated, slightly compressed laterally, rounded at apex; antennæ long, slender, segments not apically enlarged. Thorax polished, finely punctured; parapsidal grooves slightly indicated; scutellum oval; metathorax with faint longitudinal carinæ, the median ones lying close together. Abdomen elongate, pyriform in ♀, smooth, subpolished; ovipositor not distinctly exserted; petiole straight, rather slender; gradually broadening, longitudinal carinæ near together and reaching nearly to apex.

Face black, clypeus yellow.
Posterior coxæ rufous ..... **sedulus** Cress.
Posterior coxæ black or dusky ..... **festivus** Cress.
Face yellow; posterior coxæ rufous ..... **propinquus** Cress.

Synœcetes sedulus Cress. (*Mesoleptus*), Trans. Am. Ent. Soc. ii, 97.

♀ ♂.—6-7 mm. Head and thorax black, abdomen and legs rufous; four anterior legs paler, and in ♂ the trochanters and coxæ are whitish; clypeus, mouth-parts and tegulæ pale yellow; antennæ rufous; petiole of abdomen is often dusky; wings hyaline, nervures and stigma brown.

Seven specimens from New York, Massachusetts, Michigan, Connecticut and New Jersey (type, coll. Amer. Ent. Soc.).

Synœcetes festivus Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 279.

♀ ♂.—Same as above except the posterior coxæ are black or reddish black, and the abdomen of the ♂ is nearer black.

Two specimens from Colorado and Illinois (type, coll. Am. E. S.).

Synœcetes propinquus Cress. (*Mesoleptus*), Trans. Am. Ent. Soc. ii, 97.

♂.—7 mm. Black; with antennæ, legs and more or less of median abdominal segments, rufous; face, mouth-parts, scape beneath, tegulæ, trochanters and four anterior coxæ whitish yellow; wings hyaline, nervures and stigma yellow; the abdomen is longer and the petiole more slender in this species than the other two.

Two specimens from Massachusetts and Delaware (type, coll. Amer. Ent. Soc.).

WESTWOODIA Provancher.

(Le Naturaliste Canadien, vii, 329, 1875.)

Body short, thickset and glabrous. Wings fuliginous, large; areolet present. Antennæ short, thickened in the middle and taper-

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ing to a point, segments short. Head broader than thorax, disc-shaped; clypeus elevated, scarcely separated; scutellum elevated; metathorax with longitudinal carinæ. Abdomen short, broadly sessile; basal segment short, triangular, dorsal carinæ faint. Legs long and strong.

Westwoodia fumipennis Prov. (*Tryphon*), Faune Ent. Can. ii, 392.

♀.—4 mm. A broad, short, thickset species with fuscous wings; head and thorax piceous to black, metathorax sometimes rufous; abdomen and legs rufous; antennæ piceous, scape rufous beneath; mandibles, palpi and tegulæ reddish yellow; wings large, longer than body, nervures and stigma dark brown; areolet large, oblique, subsessile; humeral cross-vein of hind wing broken at the middle: thorax polished; abdomen broad, subcompressed at apex; petiole short, broad, narrow at base and forming an equilateral triangle; guides of ovipositor broad, flat, black.

Canada, Mt. Washington, N. H. (Mrs. Slosson). Type, coll. Quebec Museum.

COSMOCONUS Foerster.

Cosmoconus canadensis Prov. (*Tryphon*), Nat. Can. vii, 117; (*Mesolius*) Faune, ii, 417.

♀ ♂.—6-9 mm. Black, with face, mouth-parts, more or less of antennæ at base, four anterior legs, except more or less of femora and coxæ, hind legs except coxæ, femora and apex of tibiæ, tegulæ and more or less of abdomen from apex of first segment to apex of the fifth, pale lemon-yellow, the third segment always yellow; antennæ brown, reddish at apex; wings reddish, subhyaline, nervures and stigma reddish brown; face flat, punctured and elongate below; clypeus elevated, large, sparsely hairy; spine on the front above antennæ is very prominent in our western representatives, but small and nearly wanting in the eastern ones; thorax coarsely punctured; scutellum triangular or rounded at apex, margined laterally; metathorax punctured, but not rugose; basal segment of abdomen coarsely punctured, remainder polished.

Comes very near to *elongator* Fab., except in the yellow face. Eleven specimens from Canada, New Hampshire, Colorado and Washington.

QUADRIGANA new gen.

Head oval, slightly enlarged behind eyes, closely punctured; face considerably swollen, coarsely punctured and finely pilose; clypeus polished, sparsely punctured, thick and with strong, median, transverse carina; antennæ strong, nearly as long as body. Thorax short, strong, closely punctured; slight parapsidal depressions anteriorly; scutellum triangular, oval and without distinct lateral carinæ; metanotum brightly polished, without puncture or shagreen, longitudinal carinæ large and elevated, no transverse carinæ; remainder of metathorax punctured and scabrous, carina beneath spiracles small. Ab-

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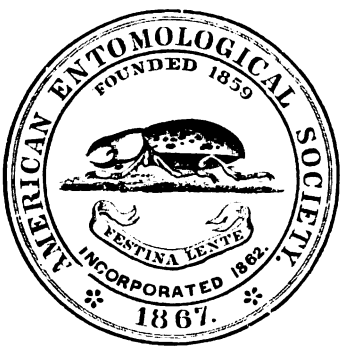

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domen strong, subcompressed in ♀, closely punctured on two basal segments, finely pilose and shagreened on remainder; ovipositor slightly exserted; petiole broad, slightly narrowed toward base, carinæ broad, strong and reaching nearly to apex. Wings with lanceolate stigma; areolet present, petiolate; second discoidal broken and with faint spur projecting outward. Legs long; tibial spurs short; third and fifth tarsal segments subequal, fourth small.

Quadrigana americana Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 276, ♂.
Tryphon affinis Cress. ibid. 277, ♀.

♀ ♂.—9-11 mm. Black, with abdomen, except basal portion of petiole, rufous; in ♂ face, scape beneath, mouth-parts, tegulæ, four anterior legs, trochanters, tarsi and annulus on tibiæ of posterior legs, pale yellow; in ♀ those parts are nearer rufous and with face above clypeus mostly black; hind legs with femora at apex, tibiæ at base and apical half and spots on tarsi dusky, femora and coxæ rufous; antennæ brown, paler at apex and beneath; wings subhyaline, nervures and stigma brown; transverse median nervure uniting back of basal; humeral cross-nervure broken near the middle.

Three females and seven males from Massachusetts, New York, Pennsylvania, New Jersey, Delaware, Michigan, Illinois, Montana and Canada (type, coll. Amer. Ent. Soc.).

TRYPHON Fallen.

(Specimen Novam Hymen. disponendi methodum exh., 1813.)

Head broad, disc shaped; a more or less distinct tubercle; clypeus large, thick, and with transverse carina. Thorax gibbous; pleuræ inflated; parapsidal grooves present anteriorly; scutellum large; metathorax plainly areolated, sometimes lacking the transverse basal carina. Abdomen sessile, subclavate, basal segment with more or less distinct carinæ. Legs robust. Wings large, areolet present, petiolate.

Two basal segments of abdomen with transverse impressions near the apex; body black ..... **nigrum** n. sp.
Two basal segments without distinct transverse impressions before apex.
Scutellum quadrangular, flat above and strongly margined and shelving at the sides ..... **semiuiger** Cress.
Scutellum triangular and subpyramidal.
Abdomen in part rufous.
Posterior coxæ and femora except apex, rufous ..... **communis** Cress.
Posterior coxæ, and usually whole of legs, black ..... **atripes** n. var.
Abdomen black or piceous ..... var. **clypeatus** Prov.

Tryphon nigrum n. sp.

♂.—6 mm. Black, with mouth-parts except basal portion of clypeus, scape and legs reddish yellow; femora and apex of tibiæ of hind legs piceous to black; tegulæ yellow; wings broad, subhyaline; nervures and stigma brown, paler at

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base; head, and especially face, coarsely punctured; thorax short, inflated; parapsidal grooves plain, shallow and extending into a broad, shallow, rugose depression before scutellum; scutellum irregularly oval, rugose and coarsely punctured; metathorax with large, high carinæ, the areas between them often reticulate; abdomen sessile, broadly oval, pilose; basal segment with strong carinæ reaching to the transverse depression which is distinct on this and the next segments near the apex; legs rather small and short.

One specimen from Gaylord, Mich. (type, coll. G. C. D.).

Tryphon seminiger Cress., Proc. Ent. Soc. Phil. iii, 278.

Tryphon pediculatus Prov., Add. Faune Hymen. 102.

Metopius terminalis Ashm., Proc. U. S. Nat. Mus. xii. 438, ♂.

♀ ♂.—Black; abdomen rufous, often black or dusky at apex in ♂, petiole black, rufous at apex: legs rufous, coxæ black, and usually apex of hind femora and tibiæ dusky; clypeus and mouth-parts yellowish white; antennæ reddish brown; wings subhyaline, nervures and stigma brown, paler at base; stigma thick, lanceolate; areolet oval, petiolate; transverse median nervure uniting back of basal; head shagreened, pilose, disc-shaped; face oval, with thick silvery pile and with median prominence from which there projects a small tooth on the upper side; clypeus thick, with strong median transverse carina; thorax strong, polished, finely punctured, pilose; parapsidal furrows indicated anteriorly; scutellum broad, shelving, rectangular with apical corners slightly rounded and lateral margins with elevated carina; a longitudinal median carina is also usually present: metathorax completely areolated, the posterior median area with median longitudinal carina; abdomen beyond second segment polished, finely punctured; first two segments coarsely punctured; second segment with oblique grooves at base; petiole but slightly narrowed at base and with strong carinæ nearly to the apex; ovipositor slightly exserted.

Sixty-one specimens from Massachusetts, Illinois, South Dakota, Montana, Colorado, Nevada, Washington, Oregon and Southern California (type, coll. Amer. Ent. Soc.).

Tryphon communis Cress., Trans. Amer. Ent. Soc. ii, 103.

Tryphon dionnei Prov., Faune Ent. Can. ii, 414, ♀.

♀ ♂.—6-9 mm. Black, abdomen usually rufous with petiole black at base, but varies from this to having the abdomen almost entirely black; clypeus is entirely yellow, often black at base in ♀; mandibles and palpi yellow, tegulæ variable; legs rufous, with hind femora and tibiæ at apex dusky, sometimes the tibiæ have a yellowish annulus; wings subhyaline, nervures and stigma brown, pale at base; apical segments of abdomen often narrowly margined with white or yellow.

Seventy specimens from New Hampshire, Massachusetts, Maine, Connecticut, New York, New Jersey, Pennsylvania, Canada, Michigan, Illinois, Kansas, Montana, Colorado, Nevada, Washington and So. California (types, coll. Amer. Ent. Soc.).

Var. **atripes** differs in having the posterior legs entirely black or piceous; abdomen rufous with base of petiole black and sometimes apical segments black.

Four females and sixteen males from Illinois, South Dakota, Montana, Colorado, Oregon and New Hampshire (types, coll. Davis and Amer. Ent. Soc.).

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Var. **clypeatus** Prov., Faune Ent. Can. ii, 412.

♂.—Differs in having the abdomen black or piceous.

Six specimens from Canada, Maine, Massachusetts, New Jersey and Montana (type, coll. Quebec Museum).

ZACALLES Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Zacalles magnus n. sp.

♀.—18 mm. Dull rufous with abdominal segments beyond the middle of the third, piceous; legs paler, mesonotum and vertex brownish; wings yellowish, fusco-hyaline, nervures brown; stigma yellow, lanceolate; areolet oblique, subsessile; second discoidal curved and uniting with outer transverse cubital; third discoidal cell at base only half as wide as the transverse median nervure; the latter unites somewhat back of basal; humeral cross-nervure of hind wing broken above middle; head flat disc-shaped, shagreened, pilose; eyes and ocelli reddish; front with oval median ridge, punctured; clypeus slightly elevated, transverse impression on apical portion and emarginate at apex; antennæ strong; thorax shagreened, punctured and pilose; mesonotum subtrilobed; scutellum elevated, oval, gradually sloping down at apex; metathorax with prominent carinæ, the basal transverse carina wanting; apical median area with median carina; abdomen smooth, broadly oval and curved; ovipositor slightly exserted; basal segment broad, but little narrowed at base, carinæ prominent, reaching nearly to base, spiracles median, tuberculate.

One specimen from New Hampshire (type, coll. Amer. Ent. Soc.).

APIMELES Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Apimeles lusorious n. sp.

♀.—4 mm. Piceous brown, with abdomen brownish, honey-yellow, basal segment darker; legs yellowish white with posterior tibiæ white, brown at extreme apex; antennæ reddish brown, paler at base; mouth-parts rufo-piceous; tegulæ yellow; wings large, hyaline, nervures and stigma brown; areolet small, obliquely quadrangular, as broad above as below; stigma very broad and short, sublanceolate; second recurrent nervure straight; cubito-discoidal nervure broken, but without stump of vein; third discoidal cell much narrowed at base; humeral cross-nervure indistinctly broken below the middle; body, even to metanotum, highly polished, sparsely punctured and finely pilose; head disc-shaped, oval on front; clypeus large, elevated, broadly rounded at apex; antennæ shorter than body, rather strong and with two basal members somewhat elongate; thorax gibbous, parapsidal grooves present anteriorly; metathorax completely and distinctly areolated; abdomen strong, smooth, polished; second segment broadening fastest; basal segment subsessile, gradually widening toward apex; dorsal carinæ faint; ovipositor ventral, large, broadly cultiform and curved upward as a hook at apex; apical ventral segment large.

One specimen from eastern Canada (type, coll. Amer. Ent. Soc.).

EPACHTES Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Epachtes basilicus n. sp.

♀ ♂.—5 mm. Black, with abdomen beyond petiole pale rufous, rarely with

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base of segments piceous; legs rufous, with posterior tibiæ dusky at apex, four anterior legs paler; apical half of clypeus, mouth-parts and tegulæ pale rufous; antennæ reddish brown, paler at apex and base beneath; wings hyaline, nervures and stigma brown; stigma thick, triangular; areolet comparatively large, subsessile; second recurrent nervure but slightly bent; cubito discoidal nervure broken; humeral cross-nervure broken below the middle; head disc-shaped, oval in front; face coarsely punctured and finely pilose; clypeus oval, polished, sparsely punctured and with faint indication of transverse median carina, apex rounded; thorax broad, deep and finely punctured; scutellum triangular, pointed at apex, carinate laterally; metathorax oval, completely areolated; abdomen curved, subclavate polished; ovipositor exserted, ventral; petiole thick, but little narrowed at base, three-sided as divided by the carinæ.

Sixteen specimens from Montana, Colorado, Oregon and Southern California (types, coll. Amer. Ent. Soc. and Davis).

ADEXIOMA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Adexioma angularis n. sp.

♀.—7 mm. Head and thorax black, with face, except median dot beneath antennæ, converging curved lines near orbital lines and upper margin of clypeus which are brown, mouth-parts, cheeks beneath, anterior orbital lines, spots on scape, scutellum, tegulæ, spot in front and another beneath, large triangular spot on margins of mesonotum, line between meso- and metapleura and four anterior coxæ and trochanters beneath, pale yellow; abdomen rufous, basal portion of petiole black; legs rufous, posterior tibiæ and tarsi dusky; antennæ brown, yellowish beneath; wings hyaline, nervures and stigma brown; areolet petiolate, oblique, the outer nervure uniting with second recurrent; transverse median nervure uniting back of basal; humeral cross-nervure broken at the middle or slightly below; body polished, finely and sparsely punctured, shagreened; face flat, gradually elevated beneath antennæ; clypeus flat, emarginate laterally on apex; labrum slightly exserted; metathorax with faint carina beneath spiracles; abdomen broad, truncate and subcompressed at apex; segments smooth; petiole broad, considerably narrowed at apex and with narrow groove nearly to apex; legs slender.

One specimen from Washington (type, coll. Amer. Ent. Soc.).

LAMACHUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Lamachus (?) contortionis n. sp.

♀.—10 mm. Head and thorax black, with anterior orbits, scape beneath, face, mouth-parts, cheeks, scutellums, tegulæ, spot beneath, margins of prothorax, pectus, most of mesosternum, lateral margins of mesonotum which extend along parapsidal furrows nearly to scutellum, where they meet, large spot on metapleuræ and transverse median band on metanotum, bright fire-red; abdomen and legs rufous, with posterior tarsi and tibiæ black, the latter with a broad yellowish red annulus near the base; antennæ brownish red; wings hyaline, nervures and stigma brown; areolet oblique, small, the outer nervure uniting slightly inside of the second recurrent; base of third discoidal cell narrower than the transverse

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median nervure; the latter unites back of basal nervure; humeral cross-nervure broken in the middle; body subpolished, shagreened, finely punctured; face oval; clypeus depressed, oval, emarginate, finely margined at apex, narrowed laterally; parapsidal grooves indicated; metanotum without a carina; abdomen arched, strong, well compressed at apex, strongly excavated at apex on dorsum for the ovipositor, which is slightly exserted, projects upward; petiole moderately broad, slightly narrowed toward apex, with deep furrow bordered by oval ridges on either side.

One specimen from District of Columbia (type, coll. Am. E. S.).

This may belong to the genus *Polycinctus*, but the petiole is much broader than any of our other species.

DIALGES Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Posterior coxæ black; scutellum almost always black.
- Hind tibiæ and tarsi black or piceous, with yellow annulus.. **frontalis** n. sp.
- Hind tibiæ and tarsi rufous with yellow annulus..... **tricolor** n. var.

Posterior coxæ rufous.
- Tibiæ black with yellow annulus; scutellum yellow ..... **rivalis** n. var.
- Tibiæ black, white at base; scutellums white..... **fasciatus** n. sp.

Dialges frontalis n. sp.

♀ ♂.—7 mm. Black, with clypeus, mouth-parts, median spot beneath antennæ, usually two orbital spots beneath, sometimes the entire face and scape beneath, tegulæ, sometimes spot before and triangular spot on lateral margins of mesonotum, rarely the scutellum, trochanters, four anterior coxæ and broad annulus on posterior tibiæ, greenish to a reddish yellow; abdomen rufous, more or less marked with black, petiole black except at apex, four anterior legs rufous or yellow, posterior legs with coxæ, and sometimes trochanters, black; tarsi, apex of tibiæ and narrow base black or piceous, femora rufous; antennæ reddish brown; wings hyaline, iridescent, nervures and stigma brown, yellow at base; stigma triangularly lanceolate, the marginal nervure uniting before middle; areolet obliqne; humeral cross-nervure of hind wing broken but little below the middle; body pilose, sparsely punctured, subpolished; head transverse, excavated behind, somewhat tuberculate in front beneath antennæ; clypeus narrow, transverse, impressed near apex; parapsidal grooves indicated anteriorly; scutellum elevated, triangular, rounded; metathorax carinate, lacking only the transverse basal carina; abdomen polished, smooth; ovipositor exserted, guides small; petiole slender, as in Mesoleptinii, gradually widening, spiracles tuberculate, carinæ prominent and extending nearly to the apex.

Four females and five males from New Hampshire, Michigan, Colorado and Indiana (types, coll. Davis and Am. Ent. Soc.).

Var. **tricolor** differs in having the posterior tibiæ and tarsi rufous; the yellow annulus is distinct on the posterior tibiæ; the abdomen is black at the extreme base and apex.

Two females and five males from New Hampshire, Massachusetts, Illinois and Montana (types, coll. Davis and Am. Ent. Soc.).

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Var. **rivalis** differs in having the posterior coxæ a bright rufous, while the posterior tibiæ and tarsi are dusky with the yellow annulus on tibiæ somewhat obscure; the thorax has all the yellow marking including the scutellum; abdomen black only on petiole.

Two females from Michigan and Philadelphia (Chas. W. Johnson). Types, coll. Davis and College.

Dialges fasciatus n. sp.

♂.—6 mm. Black, with face, scape beneath, mouth-parts, cheeks beneath, tegulæ, spot in front, spot beneath, scutellums, line on apex of first two abdominal segments and base of hind tibiæ, white; antennæ fulvous brown: apex of hind femora and their tibiæ and tarsi piceous: rest of legs rufous; wings subhyaline, nervures and stigma brown; areolet present; body broad, shagreened, finely punctured; parapsidal grooves present; metathorax without basal transverse carina; basal segment of abdomen granular, broadly oval and with deep median groove.

One specimen from Massachusetts (coll. Davis).

NŒMON Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Body short, thickset, polished, punctured and finely pilose. Head flat, broader than long; front considerably inflated, nearly flat and very coarsely punctured on the shield-like enlargement; eyes large, deep set; clypeus wide, arched, straight vertically with a transverse ridge close to the base, apex broadly oval; segments of antennæ short, strong. Thorax broad, oval; scutellum large, not elevated, rounding; metathorax punctured with clear cut carinæ, the basal transverse carina wanting. Abdomen well proportioned; ovipositor exserted and curved; petiole broad, slightly narrowed at base, smooth, faint carinæ at base are entirely wanting. Wings reaching to apex of abdomen; stigma broad, triangular; peristigma large; humeral cross-nervure of hind wing broken below the middle. Legs short, strong; femora incrassate; last tarsal segment of hind leg more than half as long as the first and longer than third and fourth together.

Inflated portion on face entirely black.
  Posterior tibiæ color of femur, size small.....**californicus** Cress.
  Posterior tibiæ with an external yellow stripe.....**lusorius** Cress.
Inflated portion of face yellow, with median dark line.....**palmaris** n. sp.

Nœmon californicus Cress. (*Tryphon*), Pr Acad. Nat. Sci. Phil. 1878. 373.

♀ ♂.—4-5 mm. Black, with clypeus, mouth-parts and tegulæ, yellow: abdomen rufous, petiole except apex, black; legs rufous, coxæ and trochanters black and on posterior legs, apex of femora, tarsi and sometimes tibiæ, dusky or piceous; antennæ piceous; wings subhyaline, nervures and stigma reddish brown; abdomen polished, finely punctured.

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Three females and four males from California (types, coll. Amer. Ent. Soc.).

Nœmon lusorius Cress. (*Tryphon*), Proc. Acad. Nat. Sci. Phil. 1878. 373.

♀ ♂.—6 mm. This species differs from *californicus* in color markings only in the yellow or white markings on the legs; the posterior tibiæ are yellowish white behind, the stripe reaching almost to the apex of the tibiæ; the four anterior legs whitish yellow from apical two-thirds of femora; the femora at base behind and beneath being more or less black. This species is also larger than *californicus* and more highly polished.

Two males and two females from Southern California (types, coll. Amer. Ent. Soc.).

Nœmon palmaris n. sp.

♀ ♂.—6 mm. Color markings the same as in *californicus* except the face, which has two semi-circular spots covering the raised portion, being separated more or less completely by a vertical dark stripe; the body, particularly the abdomen, pleuræ and the clypeus, are more highly polished than in either of the other species.

Twenty-eight females and five males from Southern California (types, coll. Amer. Ent. Soc. and Davis).

VOLUCRIS new gen.

Body coarsely and closely punctured, shagreened, subopaque, finely pilose. Head excavated behind, oval in front; antennæ tapering, segments short and thick; face rugosely punctured; clypeus scarcely separated, irregularly and deeply punctured and traversed by irregular transverse wrinkles, broadly rounded at apex. Metathorax rugose, areolated, the transverse basal carina faint or often wanting. Abdomen broad, subcompressed in ♀, ovipositor exserted, curved upward; basal segment broad, flanging at apex, carinæ wanting or small, lateral carinæ wanting between spiracles and apex. Legs long and moderately strong; apical segment of posterior trochanters extends beneath the base of the femora with a broad and rather long tooth-like projection. Wings without areolet; stigma thick, triangular, united with marginal nervure back of middle; peristigma large; third discoidal cell almost as broad at base as at apex; humeral cross-nervure of hind wing broken below the middle.

Volucris semirufus Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 278. ♀.

Tryphon ruficinctus Cress., ibid. 280. ♂.

♀ ♂.—7-8 mm. Head and thorax black, with mandibles, palpi, tegulæ, and sometimes apex of clypeus, dusky rufous; abdomen rufous, often more or less black on basal segment and dusky on apical in ♀: in ♂, black on basal segment and on the two or three apical segments, occasionally piceous on all segments; legs rufous with posterior femora somewhat piceous, in ♂ the coxæ are black;

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antennæ reddish brown; wings subhyaline nervures and stigma brown, paler at base; transverse median nervure strongly sloping, curved near lower attachment and uniting above back of basal; abdomen coarsely punctured, polished on apical segments; basal segment broad, oval above, considerably narrowed at base.

Twelve females and eight males from Illinois, Montana, Colorado and Mt. Hood, Oregon (types, coll. Amer. Ent. Soc.).

CACOTROPA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Cacotropa burrus Cress. (*Euceros*), Can. Ent. i, 104.

Sphecophagus (?) *predaror* Zabr., Journal N. Y. Ent. Soc. ii, 84.

♀.—7 mm. Rufous, with head, prothorax, sternum and notum around base of wings and scutellums, black or piceous; anterior orbits, collar, tegulæ, margin of prothorax and anterior margin of mesopleuræ white; median spot on face, clypeus and mouth-parts pale rufous; wings hyaline, nervures and stigma brown; stigma lanceolate; areolet wanting; third discoidal cell long and slender; head oval in front; clypeus elevated, curved under on apical portion and strongly emarginate; parapsidal grooves distinct, deep and narrow; pleuræ opaque, shagreened; metathorax areolated, rather indistinctly so at base of notum, rugose; abdomen oval, plump; ovipositor scarcely visible; ventral segments at apex elongate but not projecting; basal segment broadly petiolate, thick and oval above, and with median groove; antennæ strong, slightly enlarged in the middle, segments short, broad; legs strong; posterior femora slightly swollen, basal segment of tarsi enlarged; claws simple, small.

♂.—Differs in having the entire thorax piceous with meso- and metanotum tinged with rufous; face, lower half of cheeks, scape beneath, small ring segment of antennæ, sternum, four anterior coxæ and trochanters, scutellums and the other parts given in ♀ more largely white; metathorax slightly subspinose, size slightly smaller.

Three females and two males from Canada and New Baltimore, N. Y. (Rev. Zabriskie). Type, coll. Amer. Ent. Soc.

SYNDIPNUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Syndipnus longipes n. sp.

♀.—5 mm.; antennæ 6 mm. Rufous, with anterior part of vertex, cheeks beneath eyes, meso- and metasternum, anterior margin of mesopleuræ, sutures around scutellum, apex of posterior femora and extreme base and apical half of posterior tibiæ, piceous; remainder of posterior tibiæ, four anterior trochanters, palpi and tegulæ, white; wings long, hyaline, strongly iridescent, nervures and stigma reddish brown, white at base; areolet wanting, stigma lanceolate; third discoidal cell long, slender; humeral transverse nervure of hind wing broken much below the middle; head swollen above, slightly narrowed beneath, strongly shagreened; face flat, ridged beneath antennæ; clypeus small, not distinctly separated from face; antennæ long, slender; thorax strongly shagreened; pleuræ aciculate in places; metathorax areolated, the transverse basal carina wanting, basal median area small, apical median area large and reaching nearly to the base; abdomen, short broad, opaque on three basal segments, smooth above;

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ovipositor slightly exserted, basal segment very broad, triangular, carinæ obsolete; legs long, slender; posterior femora reaching to apex of abdomen; claws pectinate at base.

One specimen from Texas (type, coll. Amer. Ent. Soc.).

LISTROTA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Listrota canadensis Harr. (*Phobetes*). Can. Ent. xxvi, 248, ♀.

♀.—7.5 mm. Rufous, with spot surrounding ocelli, cheeks at base of mandibles, tips of mandibles and sutures of thorax black; scape beneath, lower orbits, cheeks beneath and mouth-parts, testaceous; wings yellowish, subhyaline, nervures and stigma brown, paler at base; areolet wanting; transverse median nervure unites back of basal; third discoidal cell broad at base, but strongly arched above; humeral cross-nervure broken slightly below the middle; head transverse, strongly shagreened, deeply emarginate behind; antennæ strong and about 30-jointed; face flat, somewhat tuberculate beneath antennæ; clypeus separate, flat, emarginate at apex; thorax gibbous, punctured and shagreened; mesonotum trilobed; scutellum convex; metathorax rugulose, rounded posteriorly and without carinæ, except the two enclosing the entire central area, median area with a central carina; abdomen broad, shagreened; ovipositor slightly exserted; basal segment arched and subsessile, very broad at apex; carinæ prominent nearly to the tip of the segment, spiracles tuberculate.

Described from the type specimen kindly loaned me by Mr. Harrington. From Victoria, V. I., Canada.

POLYTERUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Polyterus franconiæensis n. sp.

♀.—7 mm. Black, with clypeus, orbital spot each side, large orbital spots close above base of antennæ, cheeks beneath, mouth-parts, tegulæ, line in front and beneath, long and broad line on lateral margins of mesonotum, lower pleuræ, trochanters, four anterior coxæ, posterior tibiæ at base and venter, white; legs honey-yellow, with posterior tarsi and tibiæ dusky, the latter with an obscure pale annulus in the middle separated from the white base by a narrow black annulus; antennæ dark brown; wings hyaline, strongly iridescent, nervures and stigma nearly black, white at base; stigma large, triangular, the marginal nervure starting from the middle; areolet wanting, the second recurrent uniting far back of transverse cubital; humeral cross-nervure broken much below the middle; head broad, somewhat inflated behind eyes, shagreened; eyes set well out; face narrowed beneath; coarsely punctured and inflated on front; clypeus long, oval, three-sided at apex; thorax finely punctured, shagreened, pleura polished, metathorax scabrous: parapsidal grooves present, parallel and with broad depression between them; metathorax incompletely and indistinctly areolated, the median areas being the plainest; abdomen broad, rather short, segment four broadest; first two and base of third segments scabrous, remainder shagreened, subpolished: ovipositor slightly exserted; basal segment broad, oval above, considerably narrowed at base, carinæ distinct nearly to apex; legs slender.

One specimen from Franconia, N. H. (Mrs. Slosson). Type, coll. Davis.

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Polyterus olympiæ Ashm., Trans. Amer. Ent. Soc. xxiii, 199.

♂ ♀.—5.5 mm. Black, and differs from *franconiensis* in having the scutellum white, in having no white on lateral margins of mesonotum but on angles of prothorax, in lacking the white supra-orbital spots, in having nearly all the hind tibiæ white, in lacking the widely separated parallel lines on mesonotum, in having the stigma lanceolate and brown, and in being polished and much more finely sculptured.

Types from Olympia, Wash., and in coll. Ashmead.

CALLIPHRURUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Calliphrurus granulosus n. sp.

♂.—5 mm. Black, with antennæ beneath, legs beyond trochanters and abdominal segments two and three, rufous; palpi, tegulæ, spot before, trochanters and apex of four anterior coxæ white, remainder of coxæ black; wings hyaline, nervures and stigma brown, areolet wanting; face covered with long silvery pile; clypeus united with face; body granularly shagreened, parapsidal grooves distinct, metathorax completely areolated; abdomen subpetiolate; carinæ on basal segment distinct and reach to the apex.

One specimen from Illinois (Dr. Nason) and in coll. Davis.

BOETHUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Body short, thickset, mostly glabrous and finely pilose. Head transverse, disc-shaped; antennæ large, slightly thickened in the middle, blunt at apex; clypeus separated, transverse and with two distinct tubercles on the median apex; palpi small, short. Thorax spherical, scutellum elevated and large, metathorax without carinæ. Abdomen about twice as long as broad; sessile, basal segment narrowed toward base; ovipositor scarcely exserted. Legs comparatively long and slender. Wings fuscous, large; areolet pentangular in outline, but incomplete; humeral cross-nervure broken much below the middle.

Abdomen mostly black ..... **howardi** n. sp.
Abdomen rufous.
  Head and thorax rufous, immaculate ..... **alaingens** n. sp.
  Head and thorax mostly black, clypeus yellow ..... **glabranotus** n. sp.

Boethus howardi n. sp.

♂ ♀.—3.5–5 mm. Pale rufous, with abdomen beyond first segment, except lateral margins of the second and median apical margins of 2–4, and hind tibiæ and tarsi, black; spot enclosing ocelli and in ♀ apex of posterior femora dusky; antennæ reddish brown, paler toward apex.

Two specimens from Ocean Springs, Miss., and named in honor of Mr. L. O. Howard, who reared them from the sweet-potato sawfly, *Schizocerus ebenus* Nort. (see "Insect Life," vol. i, p. 43). Types in U. S. Nat. Mus.

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Boethus alaingens n. sp.

♀.—5 mm. Pale rufous, with antennæ, spot enclosing ocelli, posterior tarsi and apex of their tibiæ black, cubito-discoidal nervure bent and with a stump of a vein extending into the cubito-discoidal cell.

One specimen from San Bernardino County, California (type, coll. U. S. Nat. Mus.).

Boethus glabranotus n. sp.

♀.—5 mm. Dusky rufous, with head, except cheeks, mouth-parts and supra-orbital spot, pectus, sternum, pleuræ, entire metathorax and the coxæ, black; posterior tibiæ and tarsi piceous; mandibles except teeth and the clypeus whitish yellow; antennæ brownish black; abdomen slightly narrowed and more compressed at apex than in the two preceding species.

One specimen from Montana (type, coll. Amer. Ent. Soc.).

ATITHASUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Atithasus stellarius n. sp.

♀ ♂.—6 mm. Black, with clypeus, mouth-parts, tegulæ and spot in front, and in ♂ scape beneath and two triangular spots reaching from scape to clypeus, white; scutellums in ♀ rufous, in ♂ black; legs golden yellow with tarsi, apex of tibiæ and femora in hind legs black; posterior tibiæ and basal segment of hind tarsi behind, whitish; wings hyaline, iridescent, nervures and stigma brownish black; stigma large, lanceolate; areolet, small, oblique, incomplete generally, sometimes wanting in one wing; body shagreened, pleuræ and apical portion of abdomen polished; head disc-shaped, face oval, clypeus transverse, strongly curved under on apical portion, parapsidal grooves present, pleuræ sparsely punctured, metathorax with median areolets distinct; abdomen elongate, but little broadened beyond basal segment, even above, ovipositor slightly exserted, basal segment broad, oval above, not contracted until close to base, spiracles without carinæ from them to apex, no carinæ but a depression at base; legs slender, coxæ and femora short, posterior tibiæ extremely long and slender, curved with short black bristles and with short heavy tibial spurs, tarsi moderately long, apical segment fully as long as the third and slightly curved.

Four specimens from Texas (types, coll. Am. Ent. Soc. and Davis).

SPUDÆA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Spudæa ovale n. sp.

♀.—7 mm. Black, with clypeus, mouth-parts, tegulæ, and dot before, yellow; sometimes scutellum is tipped with rufous; legs dark honey-yellow, with posterior tarsi and apical third of tibiæ, piceous; antennæ reddish brown; wings subhyaline, nervures and stigma dark brown; stigma thick, broad, lanceolate; areolet wanting, second discoidal uniting considerably back of transverse cubital, transverse median nervure interstitial with basal; head slightly inflated, pilose, shagreened; face oval, full; clypeus rather narrow, three sided at apex, median emargination; thorax depressed above, parapsidal grooves present; scutellum somewhat elevated; metathorax oval, truncate behind, scabrous, carinæ distinct, transverse basal wanting, basal median area small, apical large; abdomen scab-

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rous to middle of third segment, with transverse depressions before apex on first two, subcompressed at apex, ovipositor slightly exserted, basal segment very broad, triangular, oval above, carinæ distinct on basal two-thirds and forming a deep depression between, lateral carinæ leading to spiracles; legs moderately long.

♂.—What appears to be the male of this species differs in having the entire face, scape beneath, small triangular spots on lateral margins of mesonotum and four anterior coxæ and trochanters yellow: in having the rough and uneven sculpturing on metathorax and abdomen more pronounced except the metathoracic carinæ, which are less prominent, and in having the transverse median nervure uniting somewhat back of basal.

Nine females and one male from New Hampshire, Colorado and Michigan, June 11th (types, coll. Am. Ent. Soc., Davis and College).

CAMPONASTES Foerster.

Camponastes basilicus n. sp.

♀.—7 mm. Black, with clypeus, mouth-parts, tegulæ, point in front, anterior coxæ, four anterior trochanters, apex of middle coxæ, apical segment of posterior trochanters, base and apex of all the femora, base of four anterior tibiæ, all except apex of three basal segments of middle tarsi, basal two-thirds of posterior tarsi and apical margins of all the abdominal segments, white; scutellums, mesosternum, pleura except upper anterior portion, metasternum and pleura, posterior coxæ and femora, and most of four anterior legs, rufous; hind legs with basal trochanter, base and apex of femora inside the white annulus, apical third of tibiæ and the tarsi, black; antennæ brown, paler beneath; wings subhyaline, nervures and stigma brown, paler at base; stigma lanceolate; areolet wanting: humeral cross-nervure of hind wing broken but little below the middle; head shagreened; face tuberculate beneath antennæ; clypeus narrow, three sided, emarginate medially; thorax polished, punctured: parapsidal grooves present; metathorax oval with median areas distinct, the apical one being large and with strong median carina; abdomen short, broad, strongly oval, shagreened, irregularly and finely wrinkled on three basal segments; ovipositor scarcely visible, basal segment broad, oval, triangular, carinæ widely separated, prominent on basal half; legs moderately strong, posterior tibiæ long, bristly and enlarged at apex; basal segment of hind tarsi enlarged and closely covered with short bristles, as are the remaining segments, which gradually taper to smaller toward the apex, claws small.

One specimen from Vermont (Mrs. Slosson). Type, coll. Davis.

PHÆSTUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Phæstus glorious n. sp.

♀.—6 mm.; ovipositor 1 mm. Black, with mesonotum, scutellum, upper mesopleuræ and prothorax amber-brown, with a slight rufous tinge; mouth-parts, cheeks beneath, scape, tegulæ, spot before, apical margins of all the abdominal segments, base of segments 2 and 3, median longitudinal line on segment 2 and a partial one on 3, coxæ, trochanters, knees and posterior tibiæ except apex, yellowish white; remainder of legs and venter honey-yellow, posterior tarsi and tibiæ at apex dusky; antennæ tapering, hairy, reddish brown; wings hyaline, iridescent, nervures and stigma reddish brown; stigma large, subtriangular,

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radius starting before the middle, areolet obsolete; humeral cross-nervure oblique and broken at extreme base; head and thorax pilose, polished; face tuberculate and with a few scattering punctures; clypeus large, elevated, pilose and with a strong row of bristles on apical margin, a small transverse impression near the apex; parapsides indicated anteriorly; metathorax smooth, polished, carinæ small, distinct; basal and superior areas and first and second pleural areas united, the others complete; abdomen shining, gradually widening from base, subcompressed at apex; petiole subsessile, small dorsal carinæ reach nearly to apex; legs moderate.

One specimen from Washington (type, coll. Amer. Ent. Soc.).

HOLMGRENIA Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

This genus differs but little in a general way from *Mesoleius* except for the inflated basal segment of the hind tarsi. The segment is often compressed instead of circular. Body shagreened, often opaquely so. Abdomen sessile and with carinæ at base; metathorax not completely areolated.

Abdominal segments with plain white apical margins; pleuræ and sterna rufous.
  Hind femora black..... .....**tarsalis** Cress.
  Hind femora rufous.....**cressoni** n. sp.
Abdominal segments black, or with very slight, pale apical margins.
  Lateral margins of mesonotum white; scutellum pale; face with central white stripe .....**euurae** Ashm.
  Lateral margins of mesonotum without white markings.
    Scutellum pale, posterior tibiæ pale, dusky at apex; sterna and lower pleuræ white; stigma subtriangular.....**virginiensis** Ashm.
    Scutellum black.
      Stigma elongate, slender; face white; sterna and pleuræ black (♀), mesosternum marked with white (♂).....**lanceolata** n. sp.
      Stigma subtriangular; face black, clypeus white; mesosternum and metathorax piceo-rufous.....**picens** n. sp.

Holmgrenia tarsalis Cress. (*Tryphon*), Trans. Amer. Ent. Soc. ii, 106.

♀.—8 mm. Black, with U-shaped mark on face, mouth-parts, tegulæ, spot beneath, cuneiform mark on margins of mesonotum, scutellums, apical margins of second and following abdominal segments and apical trochanter and narrow annulus near base of tibiæ on hind legs, white; four anterior legs, hind coxæ, sterna and lower meso- and metapleura rufous; wings hyaline.

The ♂ described by Mr. Cresson is nowhere to be found. It probably does not belong to this genus; ♀ from Connecticut and in coll. Amer. Ent. Soc.

Holmgrenia cressoni n. sp.

♀.—8 mm. Black, with mouth-parts, two spots on anterior mesonotum, tegulæ, spot before, spot beneath, scutellums, stripe on posterior mesopleuræ, anterior mesosternum, venter, apical margin of all the abdominal segments (broadest toward apex), trochanters except basal part of posterior ones, four anterior coxæ

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and small annulus near base of posterior tibiæ, white; sterna and meso- and metapleuræ rufous; hind femora and coxæ and remainder of four anterior legs honey-yellow, antennæ brown; wings hyaline, nervures and stigma brown; metanotum obscurely areolated, clypeus deeply emarginate at apex; hind tarsi large and compressed.

One specimen from Texas. This beautiful specimen is in the Cresson collection, and dedicated to its owner in remembrance of the noble work done by him in this family.

Holmgrenia euurse Ashm. (*Bassus*), Proc. U. S. Nat. Mus. xii. 440.

♂.—5 mm. Black, with V-shaped mark on face, mouth-parts, tegulæ, spot before, line beneath and large cuneiform spots on margins of mesonotum, white: scutellum honey-yellow, mixed with white; sterna, lower pleuræ and legs, except hind tibiæ and tarsi which are black, ferruginous; basal segment of abdomen scabrous; carinæ on metathorax prominent; clypeus short, impressed at apex; hind tarsi tapering, basal segment very large; wings hyaline.

Type from Placer County, California (coll. U. S. Nat. Mus.).

Holmgrenia virginiensis Ashm.

♀.—6 mm. Black, with face, mouth-parts, cheeks beneath, scape beneath, scutellum, tegulæ, large triangular spot before, spot beneath, pro- and mesosterna, lower mesopleurs and coxæ and trochanters, except posterior ones above, white; rest of legs ferruginous, except posterior tarsi and tibiæ at apex, which are blackish; wings hyaline, posterior tarsi not as much swollen as in *euurse*.

Type from Virginia (coll. U. S. Nat. Mus.).

Holmgrenia lanceolata n. sp.

♂ ♀.—7-8 mm. Black, with face, mouth-parts, tegulæ, point in front and in ♂ scape beneath, lower pectus, anterior mesosternum, trochanters and four anterior coxæ, white; legs rufous, with posterior tarsi and tibiæ piceous, the latter paler at base, in ♂ the legs are paler and with posterior tibiæ whitish at base; wings long, hyaline, nervures and stigma reddish brown, the latter long and very slender; antennæ reddish brown, paler in ♂; body more elongate than in the preceding species, especially in the ♂; clypeus large, emarginate at apex; hind tarsi somewhat compressed and moderately enlarged on basal segment; metathorax and base of abdomen somewhat scabrous.

Two specimens from Colorado (types coll. Davis).

Holmgrenia picea n. sp.

♀.—6 mm.—Black, with mouth-parts and tegulæ white; metathorax and lower mesothorax piceo-rufous; legs rufous, with posterior tibiæ and tarsi black; wings hyaline, nervures and stigma brown; metathorax and abdomen not scabrous; clypeus rounding at apex with scarcely an impress; abdomen broadly oval, especially on first segment, subcompressed at apex.

One specimen from Colorado (coll. Amer. Ent. Soc.).

MESOLEIUS Holmgren.

(Monographia Tryphonidum Sueciæ, p. 130, 1856.)

Body shagreened, finely punctured. Head transverse, not inflated, narrowed beneath eyes; face usually flat; clypeus moderately broad,

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transverse impressed on apical portion, usually margined at apex, more or less emarginate on median apex. Mesothorax deep, mesonotum prominent anteriorly; parapsidal grooves present anteriorly; scutellum oval, slightly prominent; metathorax small, smooth, not polished; carinæ distinct, the transverse basal wanting; median longitudinal carinæ lie close together at base and diverge considerably posteriorly. Abdomen well proportioned; ovipositor slightly exserted; segments even above; basal segment moderately broad at apex, considerably and gradually narrowed to base, carinæ or groove usually present, rarely wanting. Legs slender, rather long. Wings large, areolet almost always wanting, the second recurrent nervure uniting far back of cubital; humeral cross-nervure broken below the middle.

Abdomen and thorax mostly rufous; scutellum yellow.....**scapularis** Cress.
Abdomen mostly or entirely rufous, thorax black.
Scutellum pale.
Posterior coxæ black; trochanters and V-shaped mark on face yellow.
convergens n. sp
Posterior coxæ rufous; posterior tibiæ with more or less of a yellowish annulus.
Face and margins of mesonotum black.....**nuperus** n. sp.
Face and lateral margins of mesonotum yellow.....**visoris** n. sp.
Scutellum black.
Posterior coxæ black.
Hind tibiæ yellowish, black at apex; femora piceous..... **fidelis** n. sp.
Hind tibiæ and femora rufous.
Stigma triangular; face yellow.....**consors** n. sp.
Stigma elongate; face black, yellow spots on mesonotum.
contractus n. sp.
Posterior coxæ rufous.
Abdomen black at base and apex; posterior tibiæ yellow, black at apex.
idahœnsis n. sp.
Abdomen and posterior legs rufous.....**convexus** n. sp.
Abdomen black or piceous.
Scutellum and apical margin of abdominal segments more or less white.
Pleuræ rufous or white.
Posterior tibiæ white at base or with a distinct white annulus.
Mesonotum black; posterior coxæ and femora rufous.
submarginatus Cress.
Mesonotum rufous; posterior coxæ and femora white.
pulchranotus n. sp.
Posterior tibiæ without distinct annulus; face mostly black; scutellum with lateral white stripes.....**mellipes** Prov.
Pleuræ black.
Posterior femora and tibiæ piceous; scutellum with lateral white spots at base; white line on inner tibiæ.....**striatus** n. sp.
Posterior femora rufous; tibiæ white, black at apex; scutellums white.
audax n. sp.

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Scutellums black or dusky rufous; apical margins of abdominal segments rarely white.

Pleuræ rufous; posterior tibiæ black, white at base and with inner white stripe; abdominal segments margined with white.
puritanicus n. sp.

Pleuræ black.

Coxæ rufous.

Posterior tibiæ white and black..... ....**pertinax** n. sp.

Posterior tibiæ rufous, dusky at apex .....**conformus** n. sp.

Coxæ black.....**articularis** n. sp.

Mesoleius scapularis Cress. (*Mesoleptus*), Trans. Am. Ent. Soc. ii, 98.

♂ ♀.—8 mm. Rufous, with head black and thorax varying from entirely rufous to piceous or part black; sternum and pleuræ usually black or piceous; abdomen sometimes black at base; face, mouth-parts, scape beneath, cheeks beneath, tegulæ, spot in front, broad triangular line on lateral margins of mesonotum sometimes recurving medially, scutellums, more or less of sternum and pectus in ♂, trochanters and four anterior coxæ, lemon-yellow; remainder of legs rufous, with tibiæ at apex and tarsi of hind legs often dusky; antennæ reddish brown; wings hyaline, nervures and stigma brown; areolet sometimes present, usually wanting; stigma lanceolate.

Twenty-four specimens from Montana, Southern California, Washington and Connecticut (type, coll. Amer. Ent. Soc.).

Mesoleius convergens n. sp.

♀.—8 mm. Head and thorax black, with scape beneath, lower portion of anterior orbits, a V-shaped line extending from antennæ to clypeus; clypeus, mouth-parts, tegulæ, point in front, line beneath, lateral margins of mesonotum, scutellums, trochanters and four anterior coxæ, lemon-yellow; abdomen rufous, basal segment black, rufous at apex; legs rufous, posterior coxæ black; antennæ brownish yellow; wings subhyaline, nervures and stigma brown; stigma lanceolate; humeral cross-nervure of hind wing broken at the middle.

Two specimens from New Hampshire (types, coll. Amer. Ent. Soc. and Davis).

Mesoleius nuperus n. sp.

♀.—6 mm. Head and thorax black, with clypeus, mouth-parts, tegulæ, spot before and tip of scutellum, yellow, trochanters and four anterior coxæ yellowish; abdomen rufous on segments 2 and 3, remainder piceous to black; legs rufous with apex of posterior tibiæ and the tarsi, dusky; antennæ reddish brown; wings subhyaline, nervures and stigma brown; humeral cross-nervure broken much below the middle; abdomen truncate at apex, short.

One ♀ from New Hampshire (type, coll. Amer. Ent. Soc.).

Mesoleius visoris n. sp.

♀ ♂.—7-8 mm. Head and thorax black; ♀ with scape beneath, face, except two black inter-orbital lines, mouth-parts, tegulæ, spot in front, line beneath, large cuneiform line on lateral margins of mesonotum, scutellums, trochanters, four anterior coxæ and venter, lemon-yellow; remainder of legs rufous; posterior tarsi and apex of tibiæ black, also a dusky annulus near base of hind tibiæ separated from the apical portion by an obscure yellowish annulus; abdomen

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rufous, subclavate; basal segment black except at apex; antennæ reddish brown; wings hyaline, humeral cross-nervure of hind wing broken at the middle.

♂.—Differs in having the entire face and also large triangular patches on lateral anterior sternum, yellow; three apical segments of the abdomen are black or blackish, and posterior tibiæ and tarsi are nearly uniform reddish brown.

Two specimens from Agricultural College, Michigan (types, coll. College and Davis).

Mesoleius fidelis n. sp.

♀.—6 mm. Head and thorax black, with clypeus, mouth-parts and tegulæ, yellowish; abdomen rufous, piceous beyond fourth segment; legs rufous, with coxæ and basal trochanters black; posterior femora and tibiæ at apex, piceous; antennæ rufous, piceous at base; wings hyaline, nervures and stigma pale brown.

♂.—What is perhaps the male of this species differs in having the face, scape beneath, triangular spot on lateral margins of mesonotum, four anterior coxæ and apical segment of posterior trochanters, yellow; basal segment of abdomen black; nervures of wings darker than in ♀.

Two specimens from New Hampshire (types, coll. Amer. Ent. Soc. and Davis).

Mesoleius consors n. sp.

♀.—6 mm. Black; abdomen rufous, with basal and apical segments somewhat piceous; face, except median dot, scape beneath, mouth-parts, cheeks beneath, tegulæ, spot in front and four anterior coxæ beneath, yellow; legs clear rufous, with coxæ and basal segment of trochanters black; antennæ brownish red dusky at base; wings hyaline, nervures and stigma brown, paler at base. This species differs from the others also in that the metathorax and petiole are scabrous, and the stigma is much broader and oval on inner side.

One specimen from New Hampshire (type, coll. Am. Ent. Soc.).

Mesoleius contractus n. sp.

♀.—6 mm. Black, with abdomen beyond basal two-thirds of basal segment dusky rufous; legs rufous, coxæ and basal trochanters black; clypeus, mouth-parts, tegulæ and spot on margins of mesonotum, yellow; antennæ slender, dark brown; wings hyaline, iridescent, nervures and stigma small, brown; stigma triangularly elongate; second recurrent straight and uniting far back of cubital; humeral cross-nervure of hind wing slightly broken below the middle; head oval, shagreened; face triangular, narrowed below; clypeus transverse, broadly arched, broadly impressed at apex and with a transverse row of long hairs; thorax shagreened; mesonotum subtrilobed; metathorax carinate, but lacking the basal transverse carina; abdomen subspatulate, shagreened, smooth above; ovipositor slightly exserted; basal segment subpetiolate at base, gradually widening to apex, carinæ with groove between present on base; legs slender.

One specimen from Canada (type, coll. Amer. Ent. Soc.).

Mesoleius idahoensis n. sp.

♀.—7 mm. Black, with segments 2 and 3 of abdomen rufous, 4 dusky rufous; clypeus, mouth-parts, tegulæ, spot before, four anterior coxæ and trochanters, apical segment of posterior trochanters and tibial spurs, yellow; posterior tibiæ yellowish with the apex and the tarsi dusky, remainder of legs rufous; antennæ

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black, brown beneath on apical portion; wings hyaline, nervures and stigma dark brown, paler at base; humeral cross-nervure of hind wings slightly broken below middle and the nervure leading from it scarcely indicated; abdomen is considerably compressed and truncated at apex; the face has two very obscure white lines leading from the scape to the clypeus.

♂.—Differs in having the entire face, scape beneath and large cuneiform spot on margins of mesonotum pale; abdomen not compressed at apex and segment 2 black, except at apex.

Two females from Moscow, Idaho (Prof. Aldrich), and one male from Colorado; females in coll. G. C. D.; male in coll. U. S. Nat. Mus.

Mesoleius convexus n. sp.

♀.—8 mm. Black, abdomen rufous, except base of petiole, which is black; legs rufous; clypeus, mouth-parts, tegulæ, point in front and spots on lateral margin of mesonotum, yellow; antennæ brownish red, scape dusky; wings hyaline, nervures and stigma brown; humeral cross-nervure broken considerably below the middle; abdomen large, arched, broadly convex; ventral fold large; carinæ on petiole distinct; face concave at base of clypeus.

One specimen from New Hampshire (type, coll. Amer. Ent. Soc.).

Mesoleius submarginatus Cress. (*Tryphon*), Pr. Ent. Soc. Phil. iii, 274.
Cryptocentrus submarginatus Cress., Walsh, Trans. St. Louis Acad. iii, 157.
Tryphon canaliculatus Prov., Nat. Can. vii, 116.

♂ ♀.—5-8 mm. Black, with more or less of face, clypeus, mouth-parts, cheeks beneath, scutellums, tegulæ, spot in front, sometimes triangular spot on margins of mesonotum, apical margins of abdominal segments (least so on first two or three), broad annulus on posterior tibiæ and tibial spurs white; the ♂ has all the above parts white and also the four anterior coxæ and trochanters; meso- and metasternum and pleuræ, rufous; legs rufous with posterior tibiæ at apex and usually base and hind tarsi, black; antennæ brown, darker at base; wings hyaline, nervures and stigma brown; sometimes the ♂ has the sterna, pleuræ, pectus and scape beneath white.

Fifteen females and four males from Massachusetts, New Hampshire, Canada, New York, Michigan, Texas, Colorado, Nevada, Washington and So. California. Date of collection September 20th and October 2d and 5th (types, coll. Amer. Ent. Soc.).

Mesoleius pulchranotus n. sp.

♂.—5 mm. Head, line on prothorax above collar, metanotum, abdomen, base and apex of tibiæ and tarsi of hind legs, black; mesonotum, upper mesopleuræ and all of metapleuræ, honey-yellow; all the rest of the body including the legs, apical margins on abdominal segments and large triangular spots on lateral margins of mesonotum, pure white; antennæ brown, paler beneath, scape white; wings hyaline, beautifully iridescent, nervures and stigma yellowish brown, carinæ on basal segment of abdomen small; antennæ slightly longer than body.

One specimen from Texas (type, coll. Amer. Ent. Soc.).

Mesoleius mellipes Prov., Faune Ent. Can. ii, 416.

♂ ♀.—6-7 mm. Black, with lower mesopleuræ, sternum and pectus rufous

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in ♀ and varies from pale rufous to white in ♂; clypeus, mouth-parts, tegulæ, point in front, line beneath, large spot on lateral margins of mesonotum, lateral stripes on scutellum, and in ♂ four anterior coxæ and trochanters and more or less of face and scape beneath, white; legs rufous to pale rufous, with posterior tarsi and tibiæ at apex, dusky; tibiæ pale yellowish to dusky rufous; abdominal segments more or less rufous; antennæ brown, paler beneath.

Five specimens from Canada, New Hampshire, New York and Washington.

Mesoleius striatus n. sp.

♂ ♀.—5 mm. Black, with scape beneath, clypeus, mouth-parts, cheeks beneath, orbital lines in ♀, face in ♂, tegulæ, spot in front, triangular spot on lateral margins of mesonotum, small lateral spots near base of scutellum, a stripe on inner basal two-thirds of posterior tibiæ and apical margins of abdominal segments, yellowish white; four anterior legs and posterior coxæ and trochanters pale rufous; hind femora piceous to black, and tarsi and tibiæ, except inner basal portion, nearly black; antennæ brown; wings subhyaline, nervures and stigma brown; transverse median nervure curved with convex portion toward apex of wing.

Two specimens from New Hampshire, one labeled as follows: "Carriage road, Mt. Washington, N. H., July 18, 1875, Geo. Dimmock" (types, coll. Amer. Ent. Soc. and Davis).

Mesoleius audax n. sp.

♀.—7 mm. Black, with clypeus, mouth parts, lateral margins of mesonotum, tegulæ, spot before, spot beneath, scutellums, apical margins of abdominal segments and annulus on posterior tibiæ, white; posterior tarsi and tibiæ at base and apex black, remainder of legs clear rufous; venter yellowish white; antennæ dark brown; wings hyaline, nervures and stigma brown.

Three specimens from Colorado and New Hampshire (types, coll. Amer. Ent. Soc. and Davis).

Mesoleius puritanicus n. sp.

♀.—6 mm. Black, with face, except median T-shaped spot reaching from antennæ to clypeus, anterior orbits, mouth-parts, cheeks beneath, scape beneath, tegulæ, line in front, another beneath, lower pleuræ, apical margin of abdominal segments, four anterior coxæ and trochanters, posterior coxæ beneath, apical segment of posterior trochanter and with annulus at base of posterior tibiæ which continues on the inner part of the tibiæ to beyond the middle forming almost another median annulus, white; posterior legs with coxæ above, basal trochanters, base and apex of femora, apex of tibiæ, with posterior stripe extending upward nearly to base, and tarsi piceous to black; remainder of legs and the sternum rufous; antennæ dark brown; wings subhyaline, nervures and stigma brown; basal segment of abdomen slightly oval above and with carinæ distinct nearly to apex.

One specimen from New Hampshire (coll. Amer. Ent. Soc.).

Mesoleius pertinax n. sp.

♀.—6 mm. Black, with clypeus, mouth-parts, tegulæ, spot in front, tibial spurs and broad median annulus on posterior tibiæ, yellowish white; posterior

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tarsi and tibiæ at base and apex, black or blackish; remainder of legs rufous; antennæ reddish brown; wings hyaline, nervures and stigma brown.

♂.—Differs only in having the entire face yellow and in having the annulus on posterior tibiæ narrower and more distinct.

Two specimens, Colorado and New Hampshire (types, coll. Amer. Ent. Soc.).

Mesoleius conformus n. sp.

♀ ♂.—6–7 mm. Black, with clypeus, mouth-parts, tegulæ and spot before and sometimes spots above sides of clypeus, yellowish white; legs rufous, with tarsi and apex of tibiæ on posterior legs dusky; scutellum sometimes piceous; antennæ brown, scape pale beneath in ♂; wings hyaline, iridescent, nervures and stigma brown; posterior coxæ rather larger than usual and globular.

Four specimens from Colorado, Mt. Hood, Oregon, New York and New Hampshire (types, coll. Amer. Ent. Soc. and Davis).

Mesoleius articularis n. sp.

♀.—5–7 mm. Black, with clypeus, mouth-parts, tegulæ, sometimes spot on lateral margins of mesonotum and narrow apical margins of the apical abdominal segments, yellowish white; posterior coxæ and basal trochanter black; posterior tarsi and tibiæ at apex, dusky; remainder of legs rufous; antennæ brown; wings hyaline, nervures and stigma brown.

Three specimens from Colorado and Washington (types, coll. Amer. Ent. Soc. and Davis).

Tribe **MESOLEPTINI.**

1. Head more or less enlarged; compound eyes small ..... 2.
   Head not exceptionally enlarged 8
2. Longer spur of hind tibiæ shorter than second member of tarsi ..... 3.
   Longer spur as long, or longer than second member of hind tarsi ..... 5.
3. Wings with an areolet ..... **Spanotecnus** Foerst
   Wings without an areolet ..... 4.
4. Humeral cross-nervure broken below the middle ..... **Eclytus** Holmgr.
   Humeral cross-nervure broken above the middle; metanotum completely areolated ..... *Ichnæops Foerst.
5. Head very much enlarged above, occiput very deeply hollowed; second recurrent nervure usually angularly broken ..... **Polyoncus** Foerst.
   Head not greatly enlarged above; second recurrent nervure not angularly broken 6
6. Stigma small; basal segment of flagellum plainly longer than the second; spiracles of metatherax longer than broad and lying closer to the superior external area than to apical margin of pleura; segment 1 without a deep groove at side of the base ..... **Sychnoleter** Foerst.
   Stigma broad; basal segment of flagellum not decidedly longer than the second; spiracles of metathorax circular and not lying nearer to the superior external area; segment 1 with a deep groove at side of base. 7.
7. Humeral cross-nervure broken below the middle. **Laphyroscopus** Foerst.
   Humeral cross-nervure broken at or above the middle. *Perilissus Foerst.

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8. Flagellum 35 to 40 jointed, frequently thickened; petiole usually arched; in ♀ the last segments are so excavated above that the ovipositor seems to lie on the back ..... 9.
Flagellum not overly thick; last segments of ♀ not excavated ..... 12.
9. Metanotum areolated at base ..... 10.
Metanotum not areolated at base ..... **Polycinetis** Foerst.
10. Wings without an areolet ..... **Homaspis** Foerst.
Wings with an areolet ..... 11.
11. Segment 2 with two median carinæ at base ..... **Notopygus** Holmgr.
Segment 2 without carinæ at base ..... **Prosmosus** Foerst.
12. Hind femora thickened; ovipositor curved upwards. **Catoglyptus** Foerst.
Hind femora not thickened; ovipositor rarely curved upward ..... 13.
13. Cheeks perfectly smooth, neither punctured nor shagreened ..... 14.
Cheeks either punctured or shagreened, or both ..... 16.
14. Wings with an areolet ..... ***Gausocentrus** Foerst.
Wings without an areolet ..... 15.
15. Ridge of vertex broken at the middle ..... ***Lathiponus** Foerst.
Ridge of vertex not broken at the middle ..... **Phobetes** Foerst.
16. Clypeus not separated by elevation ..... 17.
Clypeus plainly separated by elevation ..... 18.
17. Eyes flat, small, not arched above the surface of the head.
***Homalomma** Foerst.
Eyes large, and arched above the surface of the head.
Hypocryptus Foerst.
18. Face narrowed beneath ..... **Rhæstes** Foerst.
Face not narrowed beneath ..... 19.
19. Segments 2-4 twice as broad as long ..... **Stiphrosomus** Foerst.
Segments 2-4 not twice as broad as long ..... 20.
20. Segment 1 with a carina at the side which extends from the spiracles to the apex ..... 21.
Segment 1 without carina extending from spiracles to apex ..... 31.
21. Wings without an areolet ..... 22.
Wings with an areolet ..... 25.
22. Apical member of hind tarsi fully as long as the third and curved.
Dizemou Foerst.
Apical number of hind tarsi not as long as the third and not often curved. 23.
23. Radius starting from the middle of the stigma ..... 24.
Radius starting back of the middle of the stigma; metanotum entirely areolated; abdomen perfectly smooth; shields of ovipositor very broad.
***Callidiotes** Foerst.
24. Apical member of hind tarsi hardly longer than the fourth; tarsal claws not large; metanotum regularly areolated; first and second lateral areas not separated by a carina ..... **Ipoctonus** Foerst.
Apical member of hind tarsi plainly longer than the fourth; tarsal claws long; metanotum not or incompletely areolated. **Mesoleptus** Grav.
25. Last member of hind tarsi as long or longer than the third and plainly bent or curved; body and antennæ long and slender.
Hadrodactylus Foerst.
Last member of hind tarsi either plainly shorter than the third, or when as long, not bent or curved ..... 26.

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26. Clypeus impressed before apex, finely margined; mesonotum and scutellum shagreened and punctured ..... **Alexeter** Foerst.
Clypeus without apical impression ..... 27.
27. Clypeus flat; second lateral area projecting tooth-like; radius starting back of the middle of stigma ..... ***Oxytorus** Foerst.
Clypeus not flat; second lateral area without tooth-like projection ..... 28.
28. Radius starting from middle of the stigma; humeral cross-nervure broken above the middle; mesonotum shagreened and punctured.
Symphobus Foerst.
Radius starting before middle of the stigma ..... 29.
29. Humeral cross-nervure broken below the middle; mesonotum and scutellum smooth, punctured; antennæ without pale annulus.
Zemiodes Foerst.
Humeral cross-nervure broken somewhat above the middle; mesonotum shagreened and punctured ..... 30.
30. Second recurrent nervure broken and with a branch which extends outward: base of third discoidal cell broader than transverse median nervure; individual teeth slightly notched at apex; antennæ and hind tarsi not annulate with white ..... ***Terozoa** Foerst.
Second recurrent nervure not broken and without spur; base of third discoidal cell not as broad as the transverse median nervure; teeth of mandibles not divided; antennæ and tarsi with white annuli.
***Himerta** Foerst.
31. Clypeus with a transverse impression at the apex ..... 32.
Clypeus without a transverse impression at the apex ..... 33.
32. Third member of maxillary palpi with a small tooth at its apex.
***Genarches** Foerst.
Third member of maxillary palpi without tooth at the apex.
***Diedrus** Foerst.
33. Wings without an areolet ..... †***Neleothymus** Foerst.
Wings with an areolet ..... 34.
34. Spiracles of metathorax round, or very slightly oval; petiole of abdomen more or less arched; body shagreened ..... 35.
Spiracles of metathorax plainly elongate; petiole of abdomen large, straight; transverse median nervure uniting considerably back of the basal; pleuræ and hind coxæ distinctly punctured but not shagreened.
Assymictus Foerst.
35. Transverse median nervure uniting back of basal; humeral cross-nervure broken below the middle ..... **Clepsiporthus** Foerst.
Transverse median nervure most usually starts in front of basal, seldom interstitial, very seldom distinctly behind it; humeral cross-nervure is almost always broken above the middle .. **Euryproctus** Holmgr.

SPANOTECNUS Foerst.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Head moderately enlarged, oval in front, considerably excavated behind; eyes small; antennæ long, slender; clypeus transverse, moderately prominent; lower tooth of mandibles larger and longer than the upper one. Mesothorax broad, without parapsidal grooves;

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metathorax oval, small, completely and distinctly areolated though the carinæ are small. Abdomen long, subclavate, subcompressed at tip in ♀ ; petiole gradually broadened toward apex. Wings ample, with rather large petiolate areolet, and humeral cross-nervure of hind wing broken above the middle.

The only apparent difference between this genus and *Perilissus* Foerst. is in the length of the hind tibial spurs, which in our representatives are all short and strong. This genus might easily be divided into two distinct and natural subdivisions, as may be seen by the following general subdivision in the synopsis:

Head, thorax and abdomen strongly shagreened; head smaller and not as oval in front.
Body piceous to black, abdomen in part rufous; head black. **coloradensis** Ashm.
Body mostly rufous; head pale..... **iladus** n. sp
Body uniform whitish yellow, or with dusky patches ..... **discolor** Cress
Head and thorax and usually base of abdomen coarsely punctured; head strongly buccate, oval in front.
Thorax black, abdomen rufous ..... **decoloratus** Cress.
Thorax and body dusky; scutellum and most of face yellow. **obscurellus** n. sp.
Thorax and entire body uniform reddish brown ..... **concolor** Cress.

Spanotecnus coloradensis Ashm., Trans. Am. Ent. Soc. xxiii, 198.

♂ ♀.—5 mm. Piceous, with legs, face, mouth-parts, cheeks beneath, tegulæ, border around it, pectus and more or less of median abdominal segments, rufous; posterior coxæ sometimes piceous; antennæ reddish brown; wings hyaline, nervures and stigma brown, pale at base; first recurrent nervure obliquely transverse; transverse median nervure unites before or with the basal; entire body coarsely shagreened, but not distinctly punctured.

Ten specimens from Montana and Mt. Hood, Oregon (type, from Colorado, coll. Ashmead).

Spanotecnus iladus n. sp.

♂.—7 mm. Ferruginous, with spot enclosing ocelli, broad margins of mesonotum, base and apex of metathorax, upper mesopleura and basal half of petiole dark piceous; orbits, face, cheeks beneath, mouth-parts, prothorax, lower pleuræ, part of sternum, tegulæ and most of trochanters and four anterior coxæ yellow; antennæ dusky above; wings subhyaline, nervures and stigma brown; humeral cross-nervure of hind wing broken slightly below the middle; body strongly shagreened.

One specimen from New York (coll. Davis).

Spanotecnus discolor Cress. (*Mesoleptus*), Proc. Ent. Soc. Phil. iii, 271.

♂ ♀.—5 mm. Uniform pale brownish yellow with spot enclosing ocelli, black, and in ♂ the meso- and metanotum and base and apex of abdomen are more or less tinged with dusky patches; head subbuccate and not strongly oval in front; the tibial spurs are also somewhat longer than in the other species; entire body

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strongly shagreened, but not distinctly punctured; carinæ on metathorax not prominent.

Four specimens from Canada, Colorado and Delaware (types, coll. Amer. Ent. Soc.).

Spanotecnus decoloratus Cress. (*Mesoleptus*), Pr. Ent. Soc. Phil. iii, 265.
Perilissus southwickii Ashm., Trans. Amer. Ent. Soc. xxiii, 196.

♂ ♀.—7 mm. Black to piceous, with legs, face, antennæ, mouth-parts, lower half of cheeks, pectus, tegulæ, spot before, another beneath, and abdominal segments 2-4 rufous; wings hyaline, nervures and stigma reddish brown, yellow at base; first recurrent nervure nearer parallel with the wing than transverse to it; transverse median nervure uniting far back of basal; body polished; head, thorax and basal segment of abdomen coarsely punctured; remaining segments of abdomen very finely shagreened.

Three specimens from Illinois (type, coll. Amer. Ent. Soc.).

Spanotecnus obscurellus n. sp.

♀.—6 mm. Dusky ferruginous, with pro- and mesothorax, occiput, and vertex to base of antennæ, black; broad orbital lines, face, clypeus, mouth-parts, tegulæ, spot in front, one beneath and scutellum, yellow; legs and metathorax ferruginous; head and mesothorax coarsely punctured; metathorax and abdomen finely punctured and shagreened; basal segment of abdomen not more coarsely punctured than the others; wings hyaline, nervures and stigma brown.

One specimen from Connecticut (coll. Amer. Ent. Soc.).

Spanotecnus concolor Cress. (*Mesoleptus*), Proc. Ent. Soc. Phil. iii, 270.

♂ ♀.—7-9 mm. Uniform deep reddish brown; body polished; head, thorax and basal segment of abdomen coarsely punctured; remaining segments of abdomen finely shagreened; wings hyaline, nervures and stigma brown, yellow at base; head strongly oval in front.

Twenty-five specimen from Massachusetts, New Hampshire, New York, New Jersey, Pennsylvania, Michigan, Montana and Idaho (type, coll. Amer. Ent. Soc.).

ECLYTUS Holmgren.

(Monographia Tryphonidum Sueciæ, 127, 1855.)

Head buccate, emarginate behind; eyes small, deep set, front oval, clypeus large, elevated, more or less impressed at apex; teeth of mandibles of equal length; antennæ long and slender. Thorax with parapsidal grooves present anteriorly; scutellum elevated; metathorax completely areolated. Abdomen slender, more or less compressed toward apex; ovipositor short, guides small; basal segment petiolate, slender, moderately broadened behind spiracles and with faint dorsal carinæ. Legs slender; hind tibiæ with basal and median constriction; tibial spurs very short. Wings long, stigma lanceolate, areolet wanting, humeral cross-nervure broken below the middle.

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Second abdominal segment polished; scutellum, lateral margins of mesonotum and apical margins of abdominal segments yellow ... **perennis** n. sp.
Second abdominal segment strongly shagreened; scutellum and margins of mesonotum not yellow ..... **pleuralis** Prov.

Eclytus perennis n. sp.

♂ ♀.—Head varies from yellow with black spot enclosing ocelli to having the upper half, except orbital lines, black, sometimes partly rufous; thorax varies from having the dorsal half black, with scutellum, stripe on margins of mesonotum, stigma, spot in front, spot beneath, and all of lower half yellow, to having the lower half and mesonotum rufous with upper yellow markings as before; abdomen black to piceous, with apical margins of segments distinctly yellow; legs yellow, somewhat tinged with fuscous; antennæ dusky yellow, scape yellow beneath; wings hyaline, iridescent, nervures and stigma yellowish brown; head and mesonotum polished in ♂, finely punctured in ♀; abdomen polished, basal segment shagreened in ♀.

Three specimens from New Hampshire and New York (types, coll. Amer. Ent. Soc. and Davis).

Eclytus pleuralis Prov., Faune Ent. Can. ii, 408.

♂ ♀.—4-6 mm. Black, with face, mouth-parts, cheeks, orbital lines, usually broken above, prothorax, sternum, meso- and metapleuræ, tegulæ, legs usually, narrow apical margins of abdominal segments and venter yellow or rufous; antennæ dark brown, scape yellow beneath; wings hyaline iridescent, nervures and stigma yellowish brown; head, mesonotum and pleura quite coarsely and closely punctured; three basal segments of abdomen and sometimes the whole of the abdomen strongly shagreened.

Five specimens from New Hampshire, Michigan and Washington, Canada (Prov.)

POLYONCUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

The four species placed under this genus may be easily recognized by having the large subcubical head deeply excavated behind. The stigma is large, rather deep; areolet present, triangular, subsessile; the humeral cross-vein of hind wing scarcely broken; second recurrent nervure straight and not broken. Metathorax distinctly and usually completely areolated, the carina between the first and second lateral areas being absent or indistinct in some specimens; petiole of abdomen considerably broadened toward apex.

Wings smoky, abdominal segments margined with yellow .... **platynus** n. sp.
Wings subhyaline.
Pleura and abdomen black ..... **mentalis** n. sp.
Pleura black, abdomen black, with lateral and apical parts rufous. **unicus** n. sp.
Pleura and band on segments 2 and 3 honey-yellow ..... **suburbe** n. sp.

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Polyoncus platyuus n. sp.

♂.—4 mm. Black, with face, mouth-parts, occiput, cheeks behind eyes, base of antennæ beneath, prothorax except dorsal spot above, tegulæ, suture between pro- and mesopleuræ, sternum and four anterior coxæ and trochanters, lemon-yellow; remainder of legs, narrow apical portion of abdominal segments, entire apical segment and more or less of a broad stripe on lateral portions of abdomen, ferruginous; apex of posterior tibiæ and the tarsi dusky; wings smoky, nervures and stigma brown; thorax broad, shagreened, parapsidal grooves present; abdomen broad, oval, polished, punctured, pilose; petiole flat above.

Three specimens from Agricultural College, Michigan (types, coll. College and Davis).

Polyoncus mentalis n. sp.

♀.—4 mm. Brownish black with broad orbital lines, clypeus, mouth-parts, except teeth, tegulæ and four anterior legs, honey-yellow; posterior legs dark honey-yellow with upper part of coxæ, base and apex of tibiæ and tarsi dusky; wings subhyaline, iridescent; nervures and stigma yellowish brown; antennæ reddish brown; thorax shagreened, parapsidal grooves scarcely distinct; abdomen smooth, polished, subcompressed at apex; basal two-thirds of venter honey-yellow; ovipositor slightly exserted.

One specimen from New Hampshire (type, coll. Amer. Ent. Soc.).

Polyoncus unicus n. sp.

♀.—4 mm. Black, with face including orbital lines each side of antennæ, mouth-parts, entire cheeks back of eyes, antennæ beneath at base, scutellum, lateral fourth on each side of abdomen beyond first segment, entire two apical segments and the legs, brick-red; posterior tarsi, tibiæ at apex and the antennæ dusky; there are also rufo-piceous spots on notum and sternum of mesothorax; tegulæ yellow; wings fusco-hyaline, paler at base; nervures and stigma brown; abdomen short, heavy, truncate and longitudinally concave above; ovipositor exserted, strong and straight; entire body covered with a yellowish pile, most abundant on abdomen.

One specimen from Agricultural College, Michigan (type, coll. Davis).

Polyoncus suburbe n. sp.

♀.—5 mm. Honey-yellow, with spot on vertex enclosing ocelli, meso- and metanotum, petiole, basal two-thirds of segment 2, median spot on apical half of segment 3 and median dorsal portion of remaining segments, black; scutellum rufous; legs honey-yellow, except apex of femora, narrow annulus at base and broad annulus at apex of tibiæ and the tarsi of posterior legs, which are black; wings hyaline, stigma and veins blackish; antennæ dark brown, paler at base beneath; abdomen subcompressed and truncate at apex; ovipositor slightly exserted.

One specimen from the suburbs of Madison, Wis. (type, coll. Davis).

SYCHNOLETER Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Sychnoleter spatiosus n. sp.

♀.—7 mm. Black, with face, anterior orbital lines, antennæ beneath, mouth-

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parts, cheeks, scutellum, tegulæ, spot in front and beneath, broad line on lateral margins of mesonotum, pectus and four anterior coxæ and trochanters yellowish white; remainder of four anterior legs and trochanters, base of tibiæ and the tarsi of hind legs, honey-yellow; abdomen rufous beyond the black petiole; antennæ yellow on apical half; posterior coxæ, femora and apical half of tibiæ black; head very broad and considerably inflated behind; eyes small, well set out; face broad, oval; antennæ widely separated at the base; clypeus abruptly depressed at apex; base of mandibles fully their width from the eyes; thorax depressed, parapsidal grooves present; metathorax without carinæ, except the one beneath the spiracles; abdomen slender at base, broad and subclavate at apex; segments smooth, apical segments polished; petiole oval, smooth, slender, postpetiole broad; head and thorax closely and finely punctured, shagreened, pilose; wings hyaline, iridescent, areolet small, oblique, petiolate; legs long, slender; ovipositor slightly exserted.

One specimen from Canada (coll. Amer. Ent. Soc.).

LAPHYROSCOPUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Laphyroscopus capitatus Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 281.

♀ ♂.—4 mm. Honey-yellow, with spot enclosing ocelli, meso- and metanotum, scutellum and abdomen except segment 3 and the venter, black; antennæ brown, with scape and base of flagellum honey-yellow; wings hyaline, with nervures pale brown, white at base, stigma broad, dark brown, areolet wanting; humeral cross-vein of hind wing broken below the middle; thorax smooth, shagreened; metathorax without carinæ; parapsidal grooves indicated; abdomen smooth, and, beyond petiole, polished, subcompressed and truncate in ♀; petiole coarsely shagreened, spiracles tuberculate in ♂.

Three females and two males from Pennsylvania, New Hampshire, Texas and Georgia (types, coll. Amer. Ent. Soc.).

POLYCINETUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Abdomen black; legs rufous..... .....**limatus** Cress.
Abdomen rufous; hind legs mostly black.....**solitarius** n. sp.

Polycinetus limatus Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 274.

♂ ♀.—9 mm. Black and highly polished, with legs ferruginous, except hind tarsi, apex of their femora and tibiæ which are dusky, more or less white on basal half of latter, most so in ♀; mouth-parts, tegulæ, point in front, line beneath, and in ♂, face and scape beneath, yellow; antennæ reddish brown; wings hyaline, areolet petiolate, oblique.

One female and two males from Delaware, New York and Montana (type, coll. Amer. Ent. Soc.).

Polycinetus solitarius n. sp.

♀.—10 mm. Black; abdomen rufous except petiole, which is black; clypeus, with two vertical stripes above and the mouth-parts except teeth, orange-yellow; tegulæ, spot in front, line beneath, anterior legs, middle legs except coxæ and basal two-thirds of posterior tibiæ, dirty-white; antennæ dark brown, large, long

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and hairy; wings subhyaline, nervures and stigma brown; areolet present, petiolate; transverse median and basal nervures nearly interstitial; face swollen beneath antennæ, coarsely punctured, pilose; clypeus transverse, broadly rounded and depressed at apex; thorax polished, pilose, sparsely punctured; pleuræ with very few punctures; parapsidal grooves distinct in front; metathorax polished and without carinæ, spiracles small, round: abdomen slender, slightly compressed toward apex, excavated at apex above; ovipositor strong, slightly exserted, guides much widened toward apex; petiole smooth or faint crease toward base, gradually expanding toward apex; legs long, posterior femora slightly swollen.

One specimen from Agricultural College, Michigan, July 17th (coll. College).

HOMASPIS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Elongate, slender, with clypeus compressed strongly toward apex; wings ample, without areolet, humeral cross-vein of hind wing broken above the middle. Thorax with parapsidal grooves present in front and metathorax areolated, lacking only the transverse basal. Legs slender.

Homaspis albipes n. sp.

♀.—10 mm. Black, with abdomen rufous, petiole dusky on basal portion; clypeus, basal half of mandibles, palpi, anterior orbital lines, two parallel stripes on face beneath antennæ, scape of antennæ beneath, tegulæ, spot in front, line beneath, scutellum, spot on mesopleura, upper portion of four anterior coxæ, four anterior tibiæ with tarsi except apical segments, white; remainder of legs rufous, with tarsi, trochanters and apical portion of tibiæ of hind legs dusky; antennæ brown; wings hyaline nervures and stigma reddish brown; thorax rather coarsely and closely punctured; abdomen slender, truncate at apex, not compressed; petiole smooth, slender at base and gradually expanding toward the apex; ovipositor scarcely exserted.

One specimen from New York (coll. Amer. Ent. Soc.).

Homaspis rhadinus n. sp.

♀.—10 mm. Dusky rufous, with head, prothorax, most of mesopleræ, metapleuræ, sutures around scutellum, posterior tibiæ, except at base, and three apical segments, black or reddish black; orbital spot above eyes, large oval spot beneath antennæ on face and four anterior legs, ferrugious: clypeus, mandibles except teeth, palpi and posterior tarsi, white; antennæ wanting; wings yellowish hyaline, nervures and stigma yellowish brown: entire body rather coarsely punctured and pilose; metathorax with heavy sharp carinæ; abdomen narrowed, but not compressed at apex; petiole slender, broadening rapidly toward apex and with distinct longitudinal groove.

One specimen from New Hampshire (coll. Amer. Ent. Soc.).

NOTOPYGUS Holmgren.

(Monographia Tryphonidum Sueciæ, 115, 1856.)

Large, rather slender species with metathorax lacking only the basal transverse carina; petiole curved, much broadened toward

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apex and with two distinct longitudinal carina at base; abdomen oval, slender, not or but slightly compressed at apex and with the ovipositor placed on the dorsum in the ♀ ; wings with areolet.

Head and thorax rufous.....**cultus** Cress.
Head and thorax black.....**excavatus** n. sp.

Notopygus cultus Cress. (*Mesoleptus*). Trans. Amer. Ent. Soc. ii, 99.

♀.—9 mm. Uniform ferruginous, with face and mouth-parts yellowish and spot enclosing ocelli, another around base of antennæ and dorsum of segments 3 and 4 of abdomen, dusky; wings subhyaline with nervures and stigma ferruginous; body punctured, shining, pilose; mesonotum subtrilobed in front; carinæ on second abdominal segment short, but distinct.

Type specimen from New Jersey (coll. Amer. Ent. Soc.).

Notopygus excavatus n. sp.

♀.—12 mm. Black; abdomen rufous, except petiole from base to spiracles, which is black; antennal sockets, clypeus, mouth-parts, tegulæ, spot in front and legs from knees out, orange-yellow; remainder of legs, except the black posterior coxæ, rufous; body shining, rather coarsely and sparsely punctured and pilose; clypeus elevated, transverse; antennæ brown, rather large, short segments; wings yellowish hyaline, nervures and stigma brown; carinæ on petiole prominent, and on the second segment reach rather more than half the length of it; parapsidal grooves wanting.

One specimen from Nevada (coll. Amer. Ent. Soc.).

PROSMOSUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Hind legs short; femora subincrassate.
Head and thorax black; mouth rufous.....**punctifrons** n. sp.
Head and thorax mostly rufous; face yellow.....**cymbæformus** n. sp.
Hind legs and body elongate; rufous, with head black.....**elongatus** n. sp.

Prosmosus punctifrons n. sp.

♂.—6 mm. Black, with abdomen except basal two-thirds of petiole, rufous; legs, mouth-parts and scutellum rufous; metathorax slightly reddish; narrow annulus on antennæ and tegulæ whitish yellow; apex of posterior tibiæ and femora dusky; wings hyaline, nervures and stigma reddish brown; areolet triangular, petiolate; head coarsely shagreened and finely punctured; face narrowed beneath the eyes; clypeus scarcely separated and with slight transverse median elevation; antennæ subclavate; thorax shagreened and punctured, flanks of the thorax longitudinally reticulate; metathorax fully but faintly areolated, apical median cell reticulate, apical carina spinose; abdomen polished; petiole curved, narrow, scarcely widening behind spiracles; legs short, robust.

One specimen from Canada (type, coll. Amer. Ent. Soc.).

Prosmosus cymbæformus n. sp.

♀.—8 mm. Pale rufous, with coxæ, pectus, metasternum, occiput, vertex around ocelli and spot around antennæ at base, dusky; antennæ black with white annulus on segments 14-25; clypeus, mouth-parts and orbital spots above eyes, pale yellow; wings subhyaline, nervures and stigma yellowish brown; areolet

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present, petiolate; body punctured and pilose; abdomen slender, subclavate; last ventral segment extending beyond the others and curved upward; ovipositor on dorsum, not exserted; petiole curved, much broadened on apical third, not strongly carinate; metathorax with transverse basal carina wanting or indistinct; clypeus separate and transverse; flagellum large, cylindrical.

One specimen from Algonquin, Ill. (Dr. Nason). Type, coll. Davis.

Prosmosus elongatus n. sp.

♀.—11 mm. Uniform rufous, with head, except lower part of face and mouth-parts, black; antennæ long, slender, black, with scape and first member of flagellum red; white annulus on segments 12-18; wings fuscous, nervures and stigma color of body, areolet petiolate, triangular; head and thorax opaquely shagreened; head small, narrowed below; clypeus polished, elongate to apex and with basal ridge caused by the large central depression below; thorax punctured and reticulate, least so on mesonotum; scutellum with lateral carinæ uniting on the apex; postscutellum very small; metathorax completely areolated, subtuberculate at outer angles; abdomen polished, long, slender; petiole arched, spiracles near the center; apex excavated, ovipositor scarcely visible.

One specimen from Texas (coll. U. S. Nat. Mus.).

CATOGLYPTUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Thorax and hind coxæ more or less rufous; areolet wanting....**fucatus** Cress.
Thorax and coxæ black; areolet present.....**femoratus** n. sp.

Catoglyptus? fucatus Cress. (*Mesoleptus*). Trans. Amer. Ent. Soc. ii, 99.
Mesoleptus erectus Prov., Faune Ent. Can. ii, 404.

♀.—6-8 mm. Color varies from almost uniform brownish rufous to brownish rufous with the thorax, except mesonotum and scutellum, and the upper part of the head being black; the abdomen is often dusky to black at apex; the legs are more or less pale yellow beyond the knees, the posterior tibiæ being usually black at apex; sometimes femora and coxæ of four posterior legs are dusky; wings yellowish, subhyaline, nervures and stigma brown; areolet wanting; antennæ brown, paler beneath, fulvous toward apex; metathorax strongly carinate, the transverse basal carina absent; abdomen smooth, polished, broad, oval; petiole slender, subtuberculate at spiracles, post-petiole considerably widened; ovipositor exserted, originates ventrally, but curves above dorsal line; legs slender, posterior femora not incrassate.

Thirteen specimens from New Hampshire, Connecticut, Massachusetts, Virginia, Canada, Colorado and Washington.

Catoglyptus femoratus n. sp.

♀ ♂.—6-8 mm. Black, with legs beyond coxæ and abdomen except base of petiole, rufous; mandibles and palpi yellowish in ♂, dusky in ♀; antennæ reddish brown in ♀, black in ♂; wings subhyaline, nervures and stigma brown, paler at base; stigma thick, triangular; areolet present, triangular, subpetiolate, transverse median vein uniting back of basal; body pilose, head and thorax closely punctured; abdomen polished, shining, arched, petiole somewhat curved; metathorax polished, without carina; petiole slender, smooth, spiracles tubercu-

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late: abdomen narrower than in preceding species; ovipositor curved upward; hind femora and coxæ much enlarged.

Two specimens from Colorado (types, coll. Amer. Ent. Soc. and Davis).

GAUSOCENTRUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Gausocentrus (?) **strigosus** Cress. (*Mesoleptus*), Tr. Am. Ent. Soc. iv. 167.

♂.—7 mm. Ferruginous, with scutellar region and flagellum nearly black; hind tarsi dusky with a small yellow annulus on segments two and three; cheeks behind eyes yellow, polished; body and legs long and slender and finely shagreened; meta- and mesothorax coarsely but sparsely punctured; head small, oval in front; clypeus separated, narrow; metathorax elongate and without carina; petiole of abdomen arched, narrow, spiracles placed just back of the middle.

Type from Texas (coll. U. S. Nat. Mus.).

PHOBETES Foerster.

Phobetes albinopennis n. sp.

♂.—6 mm. Black, with scape and mouth-parts pale piceous; hind coxæ and second abdominal segment vary from black to piceous; base of tibiæ, palpi, tegulæ, spot before and apical margin of second abdominal segment white; rest of legs ferruginous; wings large, hyaline, iridescent, nervures and stigma transparent white; areolet wanting; second recurrent nervure oblique; third discoidal cell broad, nearly square; humeral cross-nervure broken below the middle: head pilose, disc-shaped, wider than thorax, highly polished; clypeus transverse, not distinctly separated; antennæ filiform, nearly as long as body; thorax polished, mesonotum finely shagreened; parapsidal grooves deep and narrow: scutellum long, flat, and with lateral carinæ, postscutellum with two depressions; metathorax shagreened and completely and distinctly areolated; abdomen petiolate, depressed; first two segments shagreened, rest polished; basal segment broadly oval, spiracles central; legs long, slender; tibiæ slightly constricted at base.

Two specimens from So. Dakota (Prof. Aldrich) and Florida (Mrs. Slosson). Coll. G. C. Davis.

RHÆSTES Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Body entirely rufous..... **incessans** n. sp.
Head, coxæ and most of thorax, black..... **difficilis** n. sp.

Rhæstes incessans n. sp.

♀.—7 mm. Entirely rufous with sutures black; in one specimen dusky rufous with apex of hind femora, tibiæ and most of metathorax dusky; clypeus yellow; wings dusky hyaline, iridescent, nervures and stigma brown; areolet wanting; second recurrent nervure far back of cubital at juncture; head small, transverse, strongly narrowed below; base of mandibles narrower than their distance to the eyes; clypeus depressed at apex; metathorax faintly carinate; abdomen short, moderately wide, polished, shagreened, smooth; petiole oval, smooth, narrow at base, broad at apex, and not more than one and one-half times as long as broad.

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Two specimens from Colorado and Mt. Washington, New Hampshire (Mrs. Slosson). Types, coll. Amer. Ent. Soc. and Davis.

Rhæstes difficilis n. sp.

♂.—9 mm. Head and thorax black, except a dusky rufous patch on mesonotum and tegulæ, lower portion of face, clypeus and mouth-parts, which are brownish yellow; antennæ brown; legs pale rufous with coxæ and basal half of trochanters black, the terminal tarsal segment on all tarsi brown; abdomen rufous, petiole and transverse patch on second segment black; wings yellowish hyaline, nervures and stigma pale brown; areolet wanting on one side, small and petiolate on the other; body pilose, punctured; pleuræ, metathorax and face coarsely and very closely punctured; head shagreened, narrowed below eyes, clypeus compressed at tip, mandibles far from eyes; carinæ small, distinct on metathorax; abdomen shagreened, elongate, smooth, polished toward apex; petiole smooth, oval, but little broader at apex than at base, twice as long as wide.

One specimen from Colorado (coll. Amer. Ent. Soc.).

STIPHROSOMUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Stiphrosomus obesa n. sp.

♀.—7 mm. Black; abdomen, scutellums, face, except central dusky line, and clypeus, rufous; mouth-parts and four anterior legs more yellowish; posterior legs rufous, tarsi and apical half of tibiæ brown, basal half of tibiæ and tibial spurs pale yellow; antennæ reddish brown; wings subhyaline, nervures and stigma brown; areolet present, petiolate, oblique; head and thorax very finely punctured; clypeus compressed at apex and finely margined; parapsidal grooves distinct in front; longitudinal carinæ present on metathorax, the two median ones most distinct; abdomen polished, finely punctured, broad, slightly compressed at apex; ovipositor exserted; petiole smooth, narrow at base, broad at apex, spiracles somewhat tuberculate; legs strong, posterior femora slightly incrassate.

One specimen from Virginia (coll. Amer. Ent. Soc.).

DIZEMON Foerster.

Dizemon regalis n. sp.

♀.—7 mm. Black, with white markings as follows: spot on each scape beneath, face except V-shaped median portion, clypeus, cheeks beneath, mouth-parts except teeth, tegulæ, spot in front, line beneath, triangular stripe on anterior lateral margins of mesonotum, suture between meso- and metanotum, scutellums, apical margins of abdominal segments broadening toward apex and laterally, four anterior coxæ and trochanters, apical part of posterior trochanters and a stripe beneath near the base of posterior tibiæ; remainder of posterior tibiæ and the tarsi blackish; remainder of legs rufous, except terminal segments of four anterior tarsi, which are blackish; antennæ long, reddish brown; wings large, subhyaline, nervures and stigma brown; areolet wanting; second recurrent sinuate and uniting far back of the transverse cubital; transverse median nervure uniting considerably back of basal on externo-median nervure; head, thorax and abdomen shagreened; clypeus compressed laterally on anterior margin; longitudinal carinæ on metathorax, weak; petiole smooth, gradually broadened toward

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apex; abdomen subcompressed toward apex; ovipositor slightly exserted; fifth segment of hind tarsi curved, considerably longer than the third and three times as long as the fourth.

One specimen from New Hampshire (coll. Amer. Ent. Soc.).

IPOCTONUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen. 1868.)

Ipoctonus depressus Prov. (*Mesoleptus*), Faune Ent. Can. ii. 392.

♂.—8 mm. Black; face, scape beneath, mouth-parts, cheeks beneath, tegulæ, spot beneath, small spots on anterior margin of mesonotum, four anterior coxæ and all of the trochanters, lemon-yellow; hind tibiæ dusky at apex, tarsi variable, remainder of hind legs rufous, four anterior legs paler; abdomen rufous, blackish at tip and black on basal half of petiole; antennæ fulvous, darker toward the base; wings subhyaline, nervures large, reddish brown, stigma slender brown, pale at base; submedian cell shorter than median on externo-median nervure, second recurrent uniting close to transverse cubital; head slightly inflated, excavated behind; mesonotum subtrilobed; metathorax with only the transverse carina wanting; abdomen depressed, polished, gradually broadening from the base; petiole slender at base, smooth; legs slender, fourth and fifth segments of hind tarsi long, subequal; claws rather small; clypeus elevated, oval and broadly rounded at apex.

One specimen from Massachusetts.

MESOLEPTUS Gravenhorst.

(Ichneumonologia Europæa, T. ii. 1829.)

Slender; head transverse, usually broader than thorax; clypeus elevated, and either transversely impressed before apex with a truncate or emarginate front edge, or it is full, and broadly oval on the front edge without distinct margin. The lower tooth of mandibles in the latter division is usually the longer; antennæ long, setaceous. Metathorax with the longitudinal carinæ usually distinct. Wings large, areolet wanting; humeral cross-vein of hind wing broken below the middle. Legs long, slender; posterior tarsal segments variable, so that this character is of little value. Abdomen slender, usually elongate and subclavate; petiole slender, smooth above, or with groove at base; if moderately broad at base, the enlargement toward the apex is gradual and slight; ovipositor short, but usually distinct.

Clypeus transversely impressed before apex: usually ridged transversely back of the impression, and more or less emarginate at the front edge.
  Posterior femora black; tibiæ yellow, black at apex.
    Thorax black.
      Trochanters and coxæ black; clypeus black at base.
        Segments 1-3 of abdomen ferruginous; middle femora yellow.
          tardus Prov.

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Segment 1 black, 2 and 3 lemon-yellow with black markings.
nigralis n. sp.
Trochanters, clypeus, and face in ♂ yellow.
Petiole, except tip, black; post-scutellum in ♂ rufous.
distinctus n. sp.
Petiole and four anterior coxæ yellow, scutellums black...**lætus** Cress.
Thorax ferruginous.....**riparius** n. sp.
Posterior femora pale.
Antennæ with white annulus; thorax mostly rufous....**albifrons** Cress.
Antennæ not annulate with white.
Abdominal segments black with apical margins more or less white.
Petiole long, slender; sternum and scutellums white....**decens** Cress.
Petiole short, broad; small species; sternum of ♀ honey-yellow, scutellum of ♂ with two white stripes.....**zebratus** n. sp.
Abdomen more or less rufous.
Thorax mostly or entirely black.
Submedian cell longer than the median on externo-median nervure.
Posterior tibiæ and abdomen rufous at apex; hind coxæ black.
insidiosus Cress.
Posterior tibiæ and abdomen blackish at apex; hind coxæ rufous.
intimatus n. sp.
Submedian cell slightly shorter than median on externo-median nervure; mesonotum rufous; scutellum yellow.
nigropleuralis n. sp.
Thorax and abdomen entirely rufous.....**innoxius** Cress.
Clypeus elevated without distinct margin at apex or transverse impression before the apex.
Posterior femora and abdomen black.....**egregius** n. sp.
Posterior femora rufous.
Petiole of abdomen black.
Abdomen black, except on segment 3, which is yellow...**striatus** n. sp.
Abdomen rufous tipped with black, face above clypeus black.
torpens n. sp.
Petiole of abdomen and coxæ rufous.
Scutellum and thorax black.....**scrupulosus** n. sp.
Scutellum, and often part of thorax, rufous.....**rufigaster** Prov.

Mesoleptus tardus Prov. (*Tryphon*), Faune. Ent. Can. ii, 417.

♀ (and ♂ Prov.).—9 mm. Black, with the three basal segments of the abdomen yellowish ferruginous; antennæ fulvous, blackish at base; legs yellow, with coxæ, trochanters, posterior femora and tibiæ at apex, black; clypeus, except at base, and mouth-parts reddish yellow; wings yellowish subhyaline; nervures and stigma light brown; submedian cell distinctly longer on externo-median nervure than median cell; metanotum with longitudinal carinæ; mesonotum without parapsidal grooves; abdomen subpolished, smooth above, petiole gradually broadened; head and thorax opaque, clypeus scarcely elevated.

Two specimens from Canada and Mt. Washington, New Hampshire (Mrs. Slosson).

Mesoleptus nigralis n. sp.

♀.—10 mm. Black, with apical half of clypeus, central portion of mandibles,

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palpi and tarsi (somewhat yellow on basal segment), reddish brown; apical half of anterior femora, anterior tibiæ, middle tibiæ, except apical fifth, apical half of hind tibiæ, basal half of third abdominal segment and all of the second except a large, irregular black patch above, lemon-yellow; antennæ reddish brown, black at base; wings yellowish hyaline, nervures and stigma black, yellowish at base; median and submedian cells equal on externo-median vein; head and thorax opaque, abdomen subpolished; metanotum with longitudinal carinæ, the median ones uniting at base; abdomen smooth, petiole gradually widening; abdomen arched and subcompressed at apex.

One specimen from Franconia, N. H. (Mrs. Slosson); coll. Davis.

Mesoleptus pictus n. sp.

♀.—8 mm. Black, with apex of petiole, segments 2 and 3, except apex, clypeus, mouth-parts, trochanters, four anterior legs except coxæ, basal two-thirds of tibiæ and tarsi, reddish yellow; antennæ fulvous, dusky at base; wings yellowish subhyaline, nervures and stigma pale; median and submedian cells on externo-median nervure equal; clypeus prominently elevated; head and thorax opaque; abdomen subpolished, smooth, petiole gradually widening; metathorax with longitudinal carinæ the median ones approximate, nearly parallel, approaching on apical dorsum.

♂.—Differs in having the face, scape beneath, spots on anterior lateral margin of mesonotum, tegulæ, spot in front, another beneath, post-scutellum, tips of the four anterior coxæ and fourth abdominal segment lemon-yellow, or with a reddish shade.

Three specimens from Canada, Colorado and New Hampshire (types, coll. Amer. Ent. Soc. and Davis).

Mesoleptus lætus Cress. (*Mesoleius*), Proc. Acad. Nat. Sc. Phil. 1878, 372.

♂.—10 mm. Black, with face, mouth-parts, scape beneath, pectus, spots on anterior lateral margin of mesonotum, tegulæ, spot before, another beneath, abdomen except two apical segments, four anterior legs and of posterior legs, trochanters, tarsi and tibiæ, except apex, lemon-yellow; antennæ reddish brown, blackish at base; wings yellowish, subhyaline; nervures and stigma pale; median and submedian cells on externo-median nervure equal; body shagreened, subpolished; abdomen shining, smooth; petiole gradually widened, moderately broad at base; longitudinal carinæ on metathorax.

Two specimens from Vancouver, Canada (coll. Am. Ent. Soc.).

In the four preceding species the apical segment of the hind tarsi is curved, but not as long as the third.

Mesoleptus riparius n. sp.

♂ ♀.—8 mm. Ferruginous, with head, prothorax, sternum, lower half of mesopleura, broad transverse band across metathorax and coxæ, femora and apex of tibiæ of posterior legs, black or reddish black: face, mouth-parts and trochanters, lemon-yellow; remainder of legs and scutellum brownish yellow; antennæ slender, brownish red, darker at base; wings fusco-hyaline, nervures dark, stigma yellow; metathorax flat, indistinctly carinate; abdomen depressed, clavate, subcompressed at apex; ovipositor short, straight, strong; petiole smooth, strongly but evenly broadened toward apex; the whole body is shagreened and subopaque; legs slender, hind tarsi distinctly longer than their tibiæ.

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Three specimens, Canada and Grand Ledge, Mich., on the bank of the Grand River, June 29th (types, coll. Amer. Ent. Soc. and Davis).

Mesoleptus albifrons Cress., Trans. Amer. Ent. Soc. ii, 98.

♀.—9 mm. Rufous, with the head, pro- and mesonotum, abdomen beyond petiole and apical portion of posterior tibiæ dusky red to black; face, mouth-parts, cheeks beneath, scape beneath, broad annulus on flagellum, scutellum, tegulæ, spot in front, pectus, four anterior coxæ beneath and trochanters, white; remainder of legs, except femora and hind coxæ which are honey-yellow, yellowish white; antennæ black beneath the white annulus, brownish red above: wings fusco-hyaline, nervures and stigma brown; metathorax without carinæ; abdomen smooth.

One specimen from Connecticut (coll. Amer. Ent. Soc.).

Mesoleptus decens Cress., Trans. Amer. Ent. Soc. ii, 101.

♀ ♂.—7–10 mm. Black, with face, scape beneath, mouth-parts, cheeks beneath, scutellum, tegulæ, spot in front, line beneath, line on lateral margin of mesonotum, pectus, venter, four anterior coxæ and trochanters, apical half of hind trochanters and dorsal spots at the apical margin of the abdominal segments, often wanting on segments 1 and 2 and broadest on terminal segments, white; posterior legs with basal trochanters, apical portion of tibiæ and the tarsi dusky; remainder of legs ferruginous; antennæ reddish brown, darker at base above; wings hyaline, nervures and stigma pale brown; body finely pilose, subpolished; mesonotum faintly trilobed anteriorly; metanotum with carina beneath spiracles; abdomen long, slender, petiole very narrow with post-petiole broadened, spiracles prominent.

Six females and three males from New Hampshire, Connecticut, Colorado and Virginia (type, coll. Amer. Ent. Soc.).

Mesoleptus zebratus n. sp.

♀.—5 mm. Black, with clypeus, mouth-parts, cheeks beneath, face bordering on clypeus and two lines extending to antennæ, scutellum, tegulæ, dot in front, one beneath, broad triangular line on anterior margin of mesonotum, trochanters, except basal part of posterior one, which is dusky, broad annulus on hind tibiæ, hind tibial spurs and an even band on apical margin of abdominal segments 3–7, pure ebony white; hind tarsi and apex of hind tibiæ, dark brown; remainder of legs, sternum, pectus, meta- and most of mesopleura, honey-yellow; antennæ reddish brown, darker at base above; wings hyaline, strongly iridescent, nervures and stigma pale brown; thorax broad, without parapsidal grooves; metathorax faintly carinate; abdomen smooth, polished, broad; petiole short, broad, gradually widening toward the apex, faintly grooved.

♂.—Differs in not being such a pure white except on the abdomen; metathorax entirely black; scutellum black with two lateral white stripes; sternum, pectus and lower pleura white; and entire face and scape beneath, white.

Two specimens from New York (types, coll. A. E. S. and Davis).

Mesoleptus insidiosus Cress., Trans. Amer. Ent. Soc. ii, 98.

♂.—7 mm.—Black, with abdomen, except petiole, and hind legs beyond trochanters, rufous; face, scape beneath, orbital lines each side, mouth-parts, cheeks,

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scutellums, tegulæ, spot in front, lines beneath and back, hooked line on lateral margin of mesonotum, pectus, sternum and four anterior legs, lemon-yellow; antennæ fulvous; hind coxæ above, and petiole black; wings hyaline, iridescent, nervures and stigma brown; submedian cell considerably longer on externo-median nervure than median cell; second recurrent uniting far back of transverse cubital; carinæ on metathorax faint; abdomen depressed, moderately broad: petiole rather slender, gradually broadened toward apex and with slight median depressions.

One specimen, Massachusetts (coll. Amer. Ent. Soc.).

Mesoleptus intimatus n. sp.

♂.—6 mm. Black, with face, mouth-parts, cheeks beneath, scutellums, tegulæ, spot in front, another beneath, pectus, four anterior legs, hind trochanters and base of hind tibiæ, yellow; posterior coxæ and femora rufous; tarsi and apical half of tibiæ in hind legs, dusky: abdomen black, with segments 2-4 more or less rufous; antennæ reddish brown; wings subhyaline, nervures and stigma light brown; submedian cell slightly longer than the median on externo-median nervure; mesonotum broad with parapsidal grooves indicated; metathorax with faint carinæ; abdomen of equal width; petiole broad, scarcely widening toward apex, smooth except slight groove near the base.

Two specimens, Montana and Colorado (Prof. Gillette); coll. Amer. Ent. Soc. and Davis.

Mesoleptus nigropleuralis n. sp.

♂.—10 mm. Black, with vertex, mesonotum, abdomen and hind femora and coxæ dark honey-yellow; face, scape, mouth-parts, tegulæ, spot in front, line beneath, triangular spots on margin of mesonotum, scutellum, spots on pectus and anterior mesosternum, four anterior legs, hind trochanters, most of tibiæ and tarsi, yellow; apex of hind tibiæ dusky; antennæ dark reddish brown, darker toward base; wings yellowish subhyaline, nervures and stigma yellowish brown; metathorax with two median areolets, carinæ distinct; abdomen long, moderately broad; petiole broad, gradually widening toward apex.

One specimen from Nevada (coll. Amer. Ent. Soc.).

Mesoleptus innoxius Cress., Proc. Acad. Nat. Sci. Phila. 1878, 371.

♀ ♂.—7-10 mm. Ferruginous, with face, mouth-parts, tegulæ, spot in front and beneath, a more or less distinct broad lateral line on margin of mesonotum and in ♂ scape beneath, four anterior coxæ and trochanters and usually the pectus, sternum and lower pleuræ, pale yellow; wings subhyaline, nervures brown, stigma yellow; transverse median and basal nervures interstitial; abdomen slender in ♂, more clavate and subcompressed at apex in ♀; petiole long, smooth, gradually broadened toward apex, spiracles tuberculate; mesonotum faintly trilobed anteriorly; metathorax carinate, faintly so on dorsum.

Seven specimens from Nevada, Washington and British Columbia (type, coll. Amer. Ent. Soc.).

Mesoleptus egregius n. sp.

♂.—6 mm. Black, with clypeus, mouth-parts and tegulæ, lemon-yellow; coxæ and hind femora black; apex of hind tibiæ, their tarsi and basal trochanter pice-

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ous, remainder of legs ferruginous; wings subhyaline, nervures and stigma brown, paler at base; transverse median and basal nervures interstitial; body pilose, shining; mesonotum broad, without parapsidal grooves; lateral carinæ of metathorax distinct; abdomen oval, subclavate; petiole smooth, gradually considerably broadened toward apex, spiracles prominent.

One specimen from Washington (coll. Amer. Ent. Soc.).

Mesoleptus striatus n. sp.

♂.—5 mm. Black, with clypeus, mouth-parts and tegulæ whitish, coxæ black, remainder of legs and apex of second and all of third abdominal segments, ferruginous; wings large, hyaline, nervures and stigma brown; head transverse, pronotum broad, with parapsidal grooves indicated anteriorly; metathorax smooth with faint lateral carinæ; abdomen depressed, gradually widening to the apex of segment 3, petiole straight, indistinctly grooved, slender at base, tubercles prominent in middle.

One specimen from Colorado (coll. Davis).

Mesoleptus torpens n. sp.

♀ ♂.—7–8 mm. Black, strongly pilose, clypeus, mouth-parts and tegulæ yellowish white; coxæ, hind tarsi and apex of hind tibiæ, dusky to black; remainder of legs ferruginous; abdomen black, except segments 2–4, which are dull rufous; wings large, hyaline, nervures and stigma brown, paler at base; transverse median and basal nervures interstitial; thorax broad, no parapsidal grooves; metathorax with carina beneath spiracles; abdomen moderately broad, truncate and subcompressed in ♀ at apex; petiole slender at base, considerably broadened back of the tuberculate spiracles.

Two specimens from Washington and Colorado (coll. Amer. Ent. Soc. and Davis).

Mesoleptus scrupulosus n. sp.

♂ —7 mm. Black, with abdomen rufous, legs ferruginous, and clypeus, mouth-parts, tegulæ and spot in front, lemon-yellow; antennæ dark reddish brown; wings hyaline, iridescent, nervures and stigma brown, paler at base, stigma thick; parapsidal grooves indicated anteriorly; faint longitudinal carinæ on metathorax; abdomen elongate, somewhat arched, petiole slender, gradually widening, spiracles tuberculate; the whole body polished, shining and finely pilose.

Two specimens from Nevada and Washington.

Mesoleptus ruficaster Prov. (*Tryphon*), Add. Faun. Hym. 104.

♀.—5 mm. Black, with legs, scutellum and abdomen rufous, three apical segments of abdomen fuscous; clypeus, mouth-parts, tegulæ, spot in front and line beneath, yellow; antennæ brownish red; wings subhyaline, nervures and stigma brown, submedian cell longer than median on externo-median nervure; abdomen short, rather broad, truncate and compressed toward the apex, petiole with a slight median groove and gradually broadened toward the apex; head opaque, thorax slightly polished; parapsidal grooves wanting; carinæ indistinct on metanotum; abdomen smooth, polished.

Two specimens from Georgia and one from Canada.

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HADRODACTYLUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen. 1868.)

This genus contains species of the largest and most elongate representatives of the Mesoleptini. They are classified primarily by the third tarsal segment being equal in length to the third tarsal member; but kindred characters, which seem to mark the species from many others, is the form of the clypeus, which is transverse, broadly rounded on the front edge, not depressed and not separated from the face by a distinct groove, and in the submedian cell being longer (usually much longer) than the median on the externo-median nervure; antennæ are long, slender; areolet of wing present, triangular, petiolate; mesonotum with parapsidal grooves; metathorax more or less distinctly carinate; abdomen elongate, narrow, petiole slender; legs long and slender.

Thorax black.

Second abdominal segment scarcely longer than broad; posterior legs rufous abdomen sometimes dusky at apex ..... **inceptus** Cress.

Second abdominal segment nearly twice as long as broad.

Abdomen black at apex; petiole rufous, coxæ variable... **elongatus** Cress.

Abdomen black at base, apex rufous or dusky; posterior coxæ black, femora rufous ..... **coxatus** n. var.

Abdomen black at base and apex; posterior femora and coxæ black. **femoratus** n. var.

Thorax rufous.

Head black, face and hind tarsi yellow ..... **longicornis** Cress.

Head and hind tarsi color of body ..... **ruficornis** n. sp.

Hadrodactylus inceptus Cress. (*Mesoleptus*), Trans. Am. Ent. Soc. ii, 96.

♀ ♂.—8-12 mm. Black, with abdomen and legs rufous, the former sometimes dusky at base or apex; face, scape beneath, mouth-parts, tegulæ, spot in front and usually trochanters and four anterior coxæ, yellow; sometimes four anterior legs and base of posterior tibiæ are yellow, antennæ fulvous, paler beneath; wings hyaline, nervures and stigma brown; metathorax with longitudinal carinæ, petiole of abdomen slender, but broadening considerably behind the tuberculate spiracles; second segment but little longer than broad.

Three females and nine males from Massachusetts, New Hampshire, Canada, Montana, Colorado, Nevada and Washington (types, coll. Amer. Ent. Soc.).

Hadrodactylus elongatus Cress. (*Mesoleptus*), Tr. Am. Ent. Soc. ii, 96.

Mesoleptus annulatus Prov., Faune Ent. Can. ii, 397, ♀.

♀ ♂.—8-10 mm. Black, with abdomen, except the three or four terminal segments, rufous; face, scape beneath, mouth-parts, tegulæ, spot in front, four anterior coxæ, trochanters, hind tibiæ except apex and hind tarsi, yellow; apex of posterior femora and tibiæ dusky, remainder of hind legs rufous, antennæ fulvous; wings hyaline, nervures brown, stigma and nervures at base, yellow;

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metathorax roughened, carinæ more or less distinct; abdomen slender, broadly compressed and strongly clavate in ♀ toward the apex, petiole very slender and post-petiole but little widened; second segment elongate.

Four specimens from Massachusetts, Michigan, Canada and Nevada (types, coll. Amer. Ent. Soc.).

Var. **coxatus** differs in having the hind legs, except the coxæ, rufous, and in having the petiole and sometimes the base of segment 2 and the apical segments dusky to black.

Three females and one male from New York, Michigan and So. Dakota (Aldrich). Types, coll. Amer. Ent. Soc. and Davis.

Var. **femoratus** differs in having the abdomen black, except segments 2–4, which are usually rufous, and in having the posterior coxæ and femora black.

One female and three males from New York, Michigan, Colorado and Idaho (Prof. Aldrich). Coll. Davis and Amer. Ent. Soc.

Hadrodactylus longicornis Cress. (*Mesoleptus*), Pr. E. S. Phil iii, 270.

♀ ♂.—10 mm. Dark ferruginous, with the head opaque black, and the sternum, pectus and lower portion of meso- and metapleuræ more or less dusky; face, scape beneath, mouth-parts, tegulæ, spot before, trochanters and four anterior coxæ, yellow; scutellum, four anterior legs and posterior tarsi reddish yellow; antennæ long, tapering, fulvous; wings hyaline, nervures brown; stigma slender, yellow, areolet sometimes incomplete or wanting; metathorax smooth, polished, and without distinct carina; abdomen long, slender, depressed in ♂, subcompressed in ♀; petiole slender, slightly broadened toward apex; body pilose.

Four specimens from Delaware, Massachusetts, Maine and Colorado (types, coll. Amer. Ent. Soc.).

Hadrodactylus ruficornis n. sp.

♀.—7-9 mm. Rufous, with sutures, pectus and tip of mandibles more or less black; face, mouth-parts, scape beneath, tegulæ and spot before, yellow; four anterior legs and posterior trochanters, yellowish; antennæ dark fulvous; wings yellowish hyaline, nervures brown, stigma small, yellowish; body covered with short silver pile; carina below metathoracic spiracles distinct, remainder of metathorax smooth, polished; abdomen considerably broadened, subcompressed; petiole slender, considerably broadened behind the prominent spiracles.

Four specimens from Montana, Colorado and Nevada (coll. Am. Ent. Soc. and Davis).

ALEXETER Foerster.

Head transverse, face broad, clypeus transversely impressed on the apical portion, apex more or less emarginate and basal portion often transversely carinate; parapsidal grooves and carinæ on metathorax variable. Wings large; petiole present; humeral cross-vein of hind wing broken below the middle if broken at all; transverse median and basal veins of front wing usually interstitial; stigma elongate, slender. Legs slender; tarsi elongate, fourth member

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shorter than fifth, and fifth shorter than third; claws large. Abdomen of medium length; petiole usually quite short and of medium breadth, gradually widening toward apex.

Antennæ with white annulus: parapsidal grooves wanting.
  Posterior femora and coxæ black ..... **anteunatus** Prov.
  Posterior femora and coxæ rufous ..... **honestus** Cress.
Antennæ without pale annulus.
  Scutellum pale yellow; thorax black; parapsidal grooves wanting.
    compos n. sp.
  Scutellum rufous; parapsidal grooves present.
    Thorax with mesonotum rufous, sternum black.
      Head and basal segment of abdomen black..... **notatus** n. sp.
      Head and basal segment of abdomen rufous..... **seminiger** Prov.
    Thorax and abdomen pale, unicolor.
      Head black, face yellow..... **luteifrons** Cress.
      Head color of thorax, face more or less yellow... **canaliculatus** Prov.

Alexeter antennatus Prov. (*Mesoleius*), Faune Ent. Can. ii, 418.

♀.—9 mm. Black, with face, mouth-parts, scape beneath, annulus on antennæ, tegulæ, spot in front, scutellum and trochanters, pale yellow; legs ferruginous, with coxæ, femora and apex of tibiæ of hind legs, black; four anterior coxæ and middle femora variable; abdomen rufous, petiole black except at apex; wings subhyaline, nervures and stigma brown; no parapsidal grooves on mesonotum; metanotum polished, without dorsal carinæ; body pilose.

Four specimens from New Hampshire and Canada.

Alexeter honestus Cress. (*Mesoleptus*), Trans. Amer. Ent. Soc. ii, 93.

♀ ♂.—6-8 mm. Ferruginous, with head (occasionally piceous to rufous), apex of posterior tibiæ and more or less of thorax, black; face, mouth-parts, scape beneath, annulus on antennæ, scutellum, tegulæ, four anterior coxæ, trochanters, tibiæ and tarsi, yellowish white; antennæ black, reddish brown above annulus; wings hyaline, nervures and stigma brown; parapsidal grooves wanting; metanotum polished and without dorsal carina; body pilose.

Twelve specimens from New Hampshire, Canada, New York, New Jersey, Philadelphia and N. Illinois (Dr. Nason). Types, coll. Amer. Ent. Soc.

Alexeter compos n. sp.

♂.—6 mm. Black, with face, mouth-parts, scutellum, tegulæ and spot in front pale yellow; pectus and pleura, white; abdomen rufous, with petiole dusky; hind legs rufous, with trochanters and an obscure annulus on tibiæ, white; tarsi and apex of femora somewhat dusky, four anterior coxæ and trochanters white; femora, tibiæ and tarsi, yellow; antennæ ferruginous; wings hyaline, nervures and stigma brown; parapsidal grooves wanting, carinæ on metanotum wanting; abdomen polished, slender, depressed; body pilose, thorax most so.

One specimen, Canada (coll. Amer. Ent. Soc.).

Alexeter notatus n. sp.

♂.—6 mm. Black, with mesonotum, antennæ, abdominal segments 2-4 and legs dark honey-yellow; face, mouth-parts, tegulæ and trochanters, pale yellow;

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wings large, fusco-hyaline, nervures and stigma pale yellow; mesonotum with parapsidal grooves; metathorax small, flat, carinate; abdomen elongate, gradually enlarged to the apex of the sixth segment; first two segments somewhat tuberculate; body polished and sparsely pilose.

One specimen from Mt. Hood, Oregon.

Alexeter seminiger Prov. (*Mesoleptus*), Faune Ent. Can. ii, 403.

♂ ♀.—9 mm. Rufous, with pectus, sternum, lower pleuræ, lower and apical metathorax, apex of posterior tibiæ, and sometimes the femora and apical dorsum of abdomen, piceous; face, scape beneath, mouth-parts, tegulæ, posterior tarsi and posterior tibiæ except apex, yellow; four anterior legs and antennæ yellowish; wings hyaline, iridescent, nervures and stigma yellowish brown; mesonotum subtrilobed; carinæ on metathorax faint, transverse carinæ wanting.

[Located by one specimen in which the abdomen is wanting.] Canada.

Alexeter luteifrons Cress. (*Mesoleptus*), Trans. Amer. Ent. Soc. ii, 99.

♂.—7 mm. Honey-yellow, with head black, and face, scape beneath, mouth-parts, pectus, tegulæ, trochanters, four anterior legs and posterior tarsi, yellowish white; wings hyaline, nervures and stigma yellow, parapsidal grooves present; metanotum rather flat, faintly carinate; abdomen elongate, gradually broadening toward apex.

One specimen from "British America" (coll. Am. Ent. Soc.).

Alexeter canaliculatus Prov. (*Paniscus* and *Mesoleptus*), Faune Ent. Can. ii, 403.

♀ ♂.—8-11 mm. Color varies from pale honey-yellow to rufous, with the face, mouth-parts, tegulæ and four anterior legs yellowish or paler. In one specimen from Washington the front above antennæ, occiput, cheeks, pectus and sternum are black and the thorax dark rufous; another specimen from New Hampshire has the posterior tarsi pale yellow and the tibiæ black. These may be representatives of other species. Wings large, yellowish hyaline, with nervures brown, stigma yellow, parapsidal grooves distinct; metathorax with median longitudinal carinæ distinct, running close together; abdomen long, gradually widening toward the apex.

Eight specimens from Canada, New Hampshire (Mrs. Slosson), New York, Philadelphia (Chas. Johnson) and Washington.

OXYTORUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Opaquely shagreened, abdomen polished or subpolished toward apex. Head transverse, clypeus partially flattened; antennæ filiform, usually with white annulus. Thorax strongly gibbous; prothorax with deep posterior groove and high collar; parapsides distinct; scutellum elevated, margined at base; metathorax elongate, plainly and more or less completely areolated, tuberculated. Abdomen slender; petiole but slightly widened and more or less arched; areolet of the wing sessile or subsessile.

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Oxytorus antennatus Cress. (*Mesoleptus*), Proc. Ent. Soc. Phil. iii, 272.
Mesoleptus facetus Cress., Trans. Amer. Ent. Soc. ii, 100.

♂.—7 mm. Rufous to piceo-rufous, with head opaque blackish, and with annulus on antennæ and hind tarsi, white: scape and mouth-parts rufous; rest of antennæ blackish; wings hyaline, nervures and stigma pale; a slightly larger specimen from Louisiana has a narrow annulus on antennæ and none on hind tarsi. The only difference between the two types is that one is nearer piceous than the other.

Three specimens from Delaware, West Virginia and Louisiana (types, coll. Amer. Ent. Soc.).

SYMPHOBUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Symphobus pleuralis Cress. (*Tryphon*), Proc. Ent. Soc. Phil. iii, 275.

♀.—5 mm.; ovipositor .5 mm. Black, with pleura, sternum, scutellum and lateral portion of segments 2 and 3 of abdomen, rufous: legs honey-yellow, posterior tarsi and apex of the femora and tibiæ also, dusky; clypeus, mouth-parts and tegulæ, pale yellow; abdominal segments distinctly margined with white beyond the second; wings hyaline, nervures and stigma brown; areolet small, petiolate; radius starting from the middle of the stigma; humeral cross-vein of hind wing broken above the middle; thorax short, mesonotum strongly elevated in front and without parapsidal grooves; metathorax oval, with faint longitudinal carinæ; abdomen well proportioned, considerably compressed at apex, smooth; petiole gradually widened, broad at apex and without groove or carina; body opaque, shagreened and pilose.

Type specimen from New Jersey.

ZEMIODES Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Metanotum with longitudinal carinæ.

Posterior coxæ black; transverse median nervure uniting with externo-median back of basal.....**coloradensis** n. sp.

Posterior coxæ rufous; transverse median and basal nervures interstitial.

flavifrons Cress.

Metanotum polished, without carina; antennæ incrassate, black.

magnacornis n. sp.

Zemiodes coloradensis n. sp.

♀ ♂.—7-11 mm. Head and thorax black, with face, mouth-parts, scape beneath and tegulæ yellow, four anterior legs and hind trochanters yellow to ferruginous; hind legs rufous, coxæ black; abdomen rufous, with the apex sometimes black, and the first two segments more or less black; antennæ reddish brown; wings subhyaline, nervures and stigma brown; transverse median nervure uniting with the externo-median back of the basal; body punctured, pilose, subpolished, abdomen most strongly shagreened; mesonotum with parapsidal grooves present anteriorly; metathorax slightly scabrous and with distinct longitudinal carinæ; abdomen elongate; petiole straight, slender, slightly carinate on basal portion, considerably broadened behind the tuberculate spiracles; ovipositor short, straight; second abdominal segment with carina from base to the spiracles; legs slender, claws large.

Five specimens from Colorado (coll. Amer. Ent. Soc. and Davis).

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Zemiodes flavifrons Cress. (*Mesoleptus*), Proc. Ent. Soc. Phil. iii, 269.

♂.—7 mm. Black, with abdomen and posterior legs rufous; petiole on basal portion and apex of posterior tibiæ dusky; face, mouth-parts, cheeks beneath, scape beneath, tegulæ, spots in front and beneath, triangular spot on anterior mesonotum, four anterior coxæ and trochanters, indistinct lateral stripe on lower mesopleura and pectus, yellow; four anterior legs reddish yellow; antennæ dark brown; wings hyaline, nervures and stigma brown; areolet incomplete; transverse median and basal nervures interstitial; sculpture the same as in the above species, except the petiole, which is not carinate, but oval, smooth and not enlarged until almost at the apex.

One specimen from New Jersey (coll. Amer. Ent. Soc.).

Zemiodes maguacornis n. sp.

♂.—10 mm. Black, with face, except median line, three basal segments of antennæ beneath, mouth-parts, tegulæ, point in front and basal two-thirds of posterior tibiæ, yellow; coxæ black; basal trochanter, apex of tibiæ and tarsi, except basal segment, on hind legs, dusky; rest of legs honey-yellow, with hind femora pale rufous; abdomen black, with segments 2-4 rufous, except black patch on 2; antennæ black, very large and nearly as long as body; wings large, hyaline, iridescent; nervures brown, stigma yellow, lanceolate; areolet present, petiolate; transverse median nervure uniting back of basal; head shagreened, broad, coarsely punctured, pilose; clypeus sparsely punctured, broadly rounded, depressed at apex; teeth of mandibles wanting; notum of thorax polished, sparsely punctured, pleuræ closely punctured; metathorax polished, without carinæ except below spiracles; spiracles oval, elongate; abdomen elongate, scarcely widened; petiole slender, straight, without carina, gradually widened toward apex; legs long and strong, claws large.

One specimen from Washington (coll. Amer. Ent. Soc.).

DIEDRUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Coxæ rufous..... **areolatus** n. sp.
Coxæ black..... **labradorensis** n. sp.

Diedrus areolatus n. sp.

♀.—11 mm. Black, with legs and abdomen dusky rufous; anterior coxæ and basal portion of petiole, black; posterior tibiæ and tarsi and trochanters dusky; maxillary palpi white, labial piceous; median spot on face, lateral portions of clypeus and spot on mandibles, yellow; antennæ dark brown, large, tapering; wings yellowish hyaline, nervures and stigma brown; areolet large, sessile; head shagreened, pilose; face enlarged beneath antennæ, subpolished, sparsely punctured; clypeus broadly depressed at apex and slightly emarginate; thorax finely punctured, pilose, pleuræ with median polished spot; mesonotum subtrilobed; metathorax with small, distinct carinæ, basal transverse carina wanting; abdomen slender, pilose, excavated but little above at apex, coarsely punctured at base; sheaths of ovipositor broad; petiole arched, slightly carinate above and with deep lateral groove, slender at base and gradually widening.

One specimen from New Hampshire (coll. Amer. Ent. Soc.).

Diedrus labradorensis n. sp.

♀.—11 mm. Black, with abdomen, beyond petiole, dark rufous, and legs pi-

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ceous; four anterior tibiæ and tarsi paler; wings subhyaline, nervures and stigma brown: areolet small, petiolate, oval; transverse median nervure uniting slightly before the basal; head pilose, punctured and shagreened; face swollen beneath antennæ, coarsely punctured; clypeus transverse, depressed at apex; palpi piceous, antennæ rather large; mandibles broad at apex; thorax finely but closely punctured and pilose; pleuræ with central polished spot; mesonotum subtrilobed; metathorax areolated, carinæ prominent, basal transverse carinæ absent, posterior median area polished; abdomen slender, subcompressed at apex, coarsely punctured at base, polished, scarcely excavated above at apex; sheaths of ovipositor exserted, broad; petiole irregularly ridged and grooved longitudinally, arched where the tuberculate spiracles are located, slender at base, gradually widened.

One specimen from Labrador (coll. Amer. Ent. Soc.).

ASYMMICTUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Asymmictus nigrofrons n. sp.

♀.—8 mm. Black, with four posterior coxæ and three basal segments of abdomen clear rufous; wings hyaline, iridescent, nervures and stigma brown; areolet wanting; the second recurrent uniting close to the transverse cubital; antennæ slender, elongate; thorax with short silver pile; abdomen rather broad at base, gradually widening toward apex; three basal segments shagreened, finely punctured and slightly undulating, remaining segments smooth and polished; petiole broad, gradually widening; ovipositor 1 mm.

One specimen from Agricultural College, Michigan, August 17th.

Asymmictus iridescens n. sp.

♀ ?—11 mm. Black, with face, mouth-parts, tegulæ, point in front, line beneath, stripe on lateral margins of mesonotum and four anterior coxæ and trochanters beneath, yellowish white; legs bright reddish amber color, posterior tarsi dusky; wings hyaline, very strongly iridescent; nervures and stigma black; areolet large, triangular, sessile; cubito-discoidal nervure broken and with distinct stump of a vein; antennæ long, black; abdomen distinctly shagreened on segments 2-5, punctured on basal segment; truncate at apex, and if ovipositor is present it is scarcely visible.

One specimen from Nevada (coll. Amer. Ent. Soc.).

CLEPSIPORTHUS Foerster.

(Synopsis der Fam. und Gatt. der Ichneumonen, 1868.)

Shagreened, punctured and finely pilose. Head transverse, slightly inflated. Thorax more or less elevated on anterior mesonotum; parapsidal grooves usually distinct; scutellum elevated, conical; metathorax finely scabrous, carinæ small or wanting. Petiole of abdomen straight, without carina or distinct groove; transverse median vein unites with externo-median back of basal.

Thorax and abdomen rufous, areolet wanting ..... **rubiginosus** Cress.
Thorax black.
  Abdomen more or less rufous ..... **assiduus** Cress.
  Abdomen black.
    Legs black and yellow ..... **flavidus** n. sp.
    Legs rufous ..... **truncatus** n. sp.

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Clepsiporthus rubiginosus Cress. (*Mesoleius*), Proc. Acad. Nat. Sci. Phil. 1878, 372.

♀ ♂.—9–11 mm. Rufous, with sutures of thorax more or less black; mouth-parts, scape beneath, tegulæ, spot in front, scutellums, four anterior coxæ and trochanters and annulus on posterior tarsi, also usually annulus on antennæ, pectus, sternum and posterior trochanters, and sometimes anterior margin of mesonotum, posterior tibiæ, except apex, and four anterior legs, yellowish white; antennæ varies from black with a distinct white annulus on segments 10–21, to dusky rufous, slightly paler on these segments; wings yellowish hyaline, nervures and stigma brown; areolet wanting; transverse median nervures unites but little back of transverse cubital; humeral cross-vein of hind wing broken near the middle; mandibles short and broad; clypeus narrow, long, broadly depressed on apical two-thirds and with transverse ridge near the base; abdomen long, but little broadened from base; petiole broad at base gradually widening toward apex, undulating above, oval; legs large, long, and with large claws.

Two females and four males from California, Washington, Moscow, Idaho (Prof. Aldrich), Lawrence, Kansas (Prof. Aldrich) and Virginia (Chas. Johnson). Types coll. Amer. Ent. Soc.

Clepsiporthus assiduus Cress. (*Mesoleptus*), Trans. Amer. Ent. Soc. ii, 97.

♀ ♂.—7 mm. Head and thorax black, with scape beneath, anterior orbital lines, V-shaped spot beneath antennæ, clypeus, mouth-parts, tegulæ, spot in front, broad line on anterior margins of mesonotum and usually four anterior coxæ and trochanters lemon-yellow; posterior tibiæ and tarsi dusky, remainder of legs rufous; abdomen rufous, petiole more or less black, and apex dusky or black in ♂; antennæ reddish brown: wings subhyaline, nervures and stigma brown; longitudinal carinæ on metathorax minute or wanting; abdomen rather broad, shagreened; petiole much broadened behind spiracles, spiracles somewhat tuberculate and lying close above the lateral carina.

Fifteen specimens from Montana and Massachusetts (types, coll. Amer. Ent. Soc.).

Clepsiporthus flavidus n. sp.

♀.—9 mm. Black, with annulus on antennæ, scutellum, basal half of tibiæ and large annulus on hind tarsi pale yellow; four anterior tarsi and borders of yellow markings are reddish brown; wings fusco-hyaline, iridescent; areolet wanting, third discoidal cell much narrowed toward base; humeral cross-nervure broken above the middle; antennæ long, slender, involute; clypeus small, not separated, polished, transversely impressed; carinæ on metathorax wanting; abdomen smooth, depressed, ovipositor strong, short, scarcely exserted.

One specimen from Mt. Washington, N. H. (Mrs. Slosson); coll. Davis.

Clepsiporthus truncatus n. sp.

♀ ♂.—6–8 mm. Black, with face, mouth-parts, cheeks and scape beneath, orbital lines at side of antennæ, tegulæ, spot in front, another beneath, broad line on anterior margins of mesonotum, pectus and sternum, white; four anterior coxæ and trochanters white or reddish white, posterior tibiæ and tarsi dusky, remainder of legs rufous; antennæ dark brown; wings hyaline, nervures and stigma brown; areolet petiolate, sometimes wanting; humeral cross-vein of hind

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wing broken much below the middle; body opaque, shagreened, finely pilose: clypeus transverse, anterior margin broadly rounded; abdomen subclavate, gradually broadening from base; petiole narrow at base, spiracles strongly tuberculate and with sometimes a faint carina leading to the apex of the petiole, the face is sometimes black with only anterior orbital lines.

Three females and four males from Montana and Canada (coll. Amer. Ent. Soc. and Davis).

EURYPROCTUS Holmgren.

(Monographia Tryphonidum Sueciæ, 1858.)

Head transverse; vertex emarginate; clypeus transverse, scarcely separated from the front and but slightly elevated, apical margin not depressed; teeth of mandibles subequal; antennæ slender, long, usually with white annulus. Thorax and head shagreened, opaque; mesonotum usually subtrilobed in front; scutellum not prominent; metathorax gradually sloping, longitudinal carinæ and usually the apical transverse present. Abdomen shagreened, somewhat polished, more or less arched, oval above and usually considerably widened beyond petiole; external genitalia of much the same appearance in both sexes, but the abdomen is thin and depressed more in the ♂; petiole curved, slender at base, considerably broadened at apex, spiracles of petiole lying considerably above lateral carinæ. Legs slender. Wings with narrow, lanceolate stigma; areolet variable even in the same species; transverse median vein is either interstitial or placed before the basal; humeral cross-vein usually broken much above the middle.

Mesonotum with parapsidal grooves; humeral cross-vein of hind wing broken above the middle; areolet usually present.

Abdomen black.

Scutellum and orbital lines black ..... **bituminosus** n. sp.

Scutellum and anterior orbital lines white ..... **albocinctus** n. sp.

Abdomen partly rufous.

Posterior coxæ, and usually femora, black.

Scutellum and orbital lines white ..... **albopunctus** n. sp.

Scutellum black.

Face black.

Antennæ with pale annulus; abdomen rufous at apex. **petiolatus** n. sp.

Antennæ not annulate with white; abdomen black at apex.

Posterior femora black; areolet sessile, subobsolete; transverse median and basal nervures interstitial ..... **sessilis** n. sp.

Posterior femora rufous, dusky at apex; areolet small, petiolate; transverse median nervure uniting considerably in front of the basal ..... **ramis** n. sp.

Face yellow.

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Four anterior legs mostly yellow.....**curvator** n. sp.
Four anterior legs mostly black.....**moyeni** Prov.
Posterior coxæ and femora rufous.
Face and thorax black; antennæ without annulus..**puritanicus** n. sp.
Face yellow; thorax in part rufous; antennæ with pale annulus.
Areolet present; abdomen entirely rufous.....**dakotaensis** n. sp.
Areolet wanting; abdomen black at apex.....**rufopictus** n. sp.
Mesonotum without parapsidal grooves; humeral cross-vein of hind wing broken at or below the middle; areolet almost always wanting.
sentinis n. sp.

Eurycroctus bituminosus n. sp.

♀.—9 mm. Black, with a narrow annulus on antennæ and third and fourth segments of hind tarsi white; tarsi and four anterior tibiæ reddish brown; clypeus and spot beneath each antennæ, in one specimen, obscure yellow; wings yellowish hyaline, stigma dark brown, nervures yellowish brown; areolet triangular, subsessile: third discoidal cell at base very narrow—only one-half as wide as submedian cell at apex; transverse median and basal nervures nearly interstitial; humeral cross-vein broken far above the middle; apical transverse carina on metathorax present.

Two specimens from New Hampshire (coll. Amer. Ent. Soc. and Davis).

Eurycroctus albocinctus n. sp.

♀.—7-8 mm.—Black, with anterior orbital lines, clypeus, more or less of mandibles, scutellum, tegulæ, spot in front, triangular spot on anterior margins of mesonotum, annulus on antennæ and segments 2-4 of hind tarsi, white; four anterior legs beyond femora dusky white; antennæ fulvous beyond the annulus: wings yellowish, subhyaline, nervures and stigma brown; areolet sessile, obscure or wanting; third discoidal cell but little narrower at base than the submedian at its apex; apical transverse carina of metanotum present; face, thorax and coxæ pilose.

Two specimens from New Hampshire (Mt. Washington, Mrs. Slosson); coll. Amer. Ent. Soc. and Davis.

Eurycroctus albopunctus n. sp.

♀ ♂.—8 mm. Head and thorax black, with orbital lines, clypeus, two large spots beneath antennæ in ♂, annulus on antennæ, scutellum, tegulæ, spot before triangular spot on anterior margins of mesonotum and segments 2-4 of hind tarsi (sometimes all the segments), white: abdomen rufous, somewhat dusky at base of petiole; four anterior legs beyond apex of femora reddish yellow; antennæ yellowish brown beyond annulus; wings subhyaline, or yellowish subhyaline, nervures and stigma brown to yellowish brown; areolet subsessile, incomplete or wanting; base of third discoidal considerably narrower than apex of the submedian cell; transverse submedian and basal nervures interstitial.

Five females and one male from New Hampshire (Mt. Washington, Mrs. Slosson); coll. Amer. Ent. Soc. and Davis.

Eurycroctus petiolatus n. sp.

♀.—9-10 mm. Black; abdomen rufous, or dusky rufous, with petiole more or less black; annulus on antennæ and third and fourth segments on hind tarsi,

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white: four anterior legs beyond femora obscurely yellow; one specimen has parts of the head and posterior femora obscure dusky rufous; antennæ paler beyond annulus; wings dusky, or yellowish hyaline; nervures and stigma brown; areolet subsessile or with the outer nervure obscure; third discoidal smaller at base than submedian cell at apex; apical transverse carina on metathorax faint; longitudinal median carinæ strong.

Four specimens from New Hampshire (Mt. Washington, Mrs. Slosson); coll. Amer. Ent. Soc. and Davis.

Eurycroctus sessilis n. sp.

♀.—7 mm. Black, with apex of petiole and segments 2–4 of abdomen rufous; four anterior legs beyond trochanters, posterior tibiæ, except at apex, and base of posterior tarsal segments pale rufous; remainder of legs and the antennæ, black; wings subhyaline, iridescent, nervures and stigma brown; areolet sessile, the outer nervure almost wanting; third discoidal narrower at base than submedian at apex, transverse submedian and basal interstitial; clypeus scarcely distinct from the face; metathoracic carinæ as in the preceding species; abdominal segments 2–4 very broad.

One specimen from Mt. Washington, N. H. (Mrs. Slosson); coll. Davis.

Eurycroctus ramis n. sp.

♀.—8 mm. Black; abdomen, except base of petiole and segments 6 and 7, rufous; legs rufous beyond trochanters, except apex of posterior femora and tibiæ, which is dusky; antennæ black at base, gradually changing to a reddish brown; wings yellowish subhyaline, nervures and stigma yellowish brown; areolet small, petiolate, the outer nervure subobsolete; transverse median nervure uniting considerably in front of the basal; clypeus scarcely distinct, short, transverse; apical transverse carina of metathorax obsolete; abdomen moderately broad, petiole gradually widening toward the apex.

One specimen from Colorado (coll. Amer. Ent. Soc.).

Eurycroctus curvator n. sp.

♂.—8 mm. Black, with anterior orbital lines beneath antennæ, scape beneath, more or less of face, clypeus, mouth-parts, annulus on antennæ, tegulæ, spot in front, spot on lateral margins of mesonotum, four anterior legs, trochanters, tibiæ except apex and tarsal members 3–5 of hind legs, white or pale yellow; abdomen rufous, more or less black at apex, petiole black, postpetiole rufous at apex; posterior coxæ are often yellow beneath; posterior femora sometimes partly rufous; antennæ more or less yellow beyond annulus; wings yellowish hyaline, nervures and stigma brown; areolet varies from larger and sessile to entirely wanting; apical transverse carinæ prominent; abdomen broad, strongly arched.

Three specimens, Canada, Hudson Bay Territory, and Franconia, N. H. (Mrs. Slosson); coll. Amer. Ent. Soc. and Davis.

Eurycroctus moyeni Prov. (*Mesoleptus* and *Tryphon*), Faune Ent. Can. ii, 396.

Mesostenus longicornis Prov., Nat. Can. vi, 300.

♂ (and ♀ Prov.).—9 mm.; antennæ 9 mm. Black, with face, anterior orbits above antennæ, mouth-parts, cheeks beneath, tegulæ, spot in front, triangular spot on margin of mesonotum, annulus on antennæ and segments 2–4 on hind

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tarsi, pale yellow; four anterior legs beyond middle of femora, brownish yellow; antennæ dark brown beyond annulus; wings subhyaline, iridescent, nervures and stigma brown; areolet present, subpetiolate; transverse median and basal nervures interstitial; abdomen black, segments 2-4 more or less rufous.

Two specimens from Canada and New Hampshire (Mrs. Slosson).

Euryproctus puritanicus n. sp.

♀.—7 mm. Head and thorax black; clypeus, mouth-parts, legs and abdomen rufous; antennæ and apex of posterior femora and tibiæ dusky rufous; wings yellowish hyaline, nervures and stigma pale rufous; areolet wanting; transverse median nervure uniting before the basal; humeral cross-vein of hind wing broken but little above the middle; apical transverse carina on metathorax present; thorax and abdomen rather slender.

One specimen from Massachusetts (coll. Amer. Ent. Soc.).

Euryproctus dakotaensis n. sp.

♂.—10 mm. Rufous, with depression around scutellums, pleura close beneath wings and upper part of prothorax, black; face, scape beneath, annulus on antennæ, mouth-parts, cheeks, pectus, sternum, tegulæ, line on margin of mesonotum, four anterior coxæ, all trochanters and posterior tarsi, except basal segment, yellow; antennæ yellowish brown; wings yellowish hyaline, iridescent, nervures and stigma brown; areolet present, sessile, outer nervure weak; basal and transverse median nervure interstitial; metathorax without distinct, transverse apical carina, antennæ 8 mm., slender; abdomen broad toward apex, slender at base.

One specimen from Brookings, So. Dak. (Prof. Aldrich); coll. Davis.

Euryproctus rufopictus n. sp.

♀.—7 mm. Head black, with most of face, mouth-parts, scape beneath and broad annulus on flagellum, yellowish white; thorax piceous, with sternum, spot above anterior coxæ, spot on margins of mesonotum and metathorax, except apical portion, dark rufous, tegulæ and spot before, yellow; abdomen with first four segments rufous, the first piceous; legs rufous, trochanters yellow, posterior tibiæ dusky at apex; antennæ piceous; wings hyaline, iridescent, stigma and nervures brown, the former slender; areolet wanting; transverse median vein unites in front of basal.

One specimen from Texas (coll. U. S. Nat. Mus.).

Euryproctus sentinis n. sp.

♀.—6 mm. Black; abdomen rufous, more or less black on the three apical segments and sometimes dusky on the base of the petiole; legs are piceous, but vary from black to bright rufous with apex of the femora and tibiæ dusky on posterior legs; antennæ reddish or yellowish brown with small pale annulus; no annulus on hind tarsi; clypeus and mouth-parts often rufous; wings yellowish hyaline, nervures and stigma brown; areolet usually wanting, the second recurrent and cubital nervures are almost interstitial; humeral cross-vein of hind wing broken below or in the middle; mesonotum broad, oval, and without parapsidal grooves; apical transverse carina wanting on metanotum; abdomen short, oval, broad toward apex.

Eleven specimens from New Hampshire (Mt. Washington, Mrs. Slosson).

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TRYPHONINÆ NOT REGULARLY CLASSIFIED.

1. Abdomen black, segments 2–4 with red dorsal spots, other segments slightly margined with yellow; all coxæ and trochanters yellow; hind tibiæ white, black at tip.....**Tryphon dorsalis** Prov.
   Markings not as above.....2.
2. Areolet present.....3.
   Areolet wanting.....19.
3. Abdomen black, or with pale apical margins.....4.
   Abdomen partly or entirely rufous.....10.
4. Antennæ with pale annulus; legs black...**Polyblastus annulicornis** Prov.
   Antennæ without pale annulus.....5.
5. Areolet incomplete; scutellum deeply excavated at base and with lateral carinæ; coxæ and tarsi black.....**Mesoleius niger** Prov.
   Areolet complete.....6.
6. Posterior tibiæ with small white annulus; femora and coxæ red.
   Tryphon (Pyrachmon) annulatum Prov.
   Posterior tibiæ not annulate with white.....7.
7. Hind legs black beyond middle of femora....**Mesoleptus angustus** Prov.
   Hind tibiæ rufous, or dusky at apex.....8.
8. Scutellums yellow.....**Mesoleius chicoutimiensis** Prov.
   Scutellums black.....9.
9. Legs mostly rufous; clypeus rufous; antennæ black.
   Mesoleius dufresnei Prov.
   Legs dusky, femora and base of tibiæ pale; antennæ yellow at base; clypeus black.....**Tryphon quebecensis** Prov.
10. Thorax and abdomen ferruginous; legs yellow.
    Mesoleius (Pyrachmon) rufum.
    Thorax black.....11.
11. Abdomen black at base.....12.
    Abdomen not black at base.....16.
12. Base and apex of abdomen black.....13.
    Base only black.....14.
13. Two basal segments aciculate; areolet small.
    Tryphon (Mesoleptus) largus.
    Two basal segments not aciculate; areolet large.....15.
14. Hind femora yellow, their tarsi dusky.
    Mesoleius (Mesochorus) truncatus.
    Hind femora dusky; all the tarsi white, black at extremity.
    Mesoleptus rufomixtus Prov.
15. Mesonotum and scutellum black.....**Mesoleptus interruptus** Prov.
    Mesonotum and scutellum red.....**Mesoleptus lucens** Prov.
16. Scutellum black.....17.
    Scutellum not black.....18.
17. Legs rufous, coxæ black.....**Tryphon hervieuxii** Prov.
    Legs rufous; coxæ rufous, four anterior ones and all trochanters white.
    Mesoleptus (Mesostenus) albifacies Prov.
18. Scutellum and antennæ red.....**Mesoleptus laurentianus** Prov.
    Scutellum white; hind legs black, white annulus on tibiæ.
    Tryphon clapini Prov.

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19. Abdomen entirely black, or with white margins ..... 20.
Abdomen more or less rufous ..... 26.
20. Mesopleura red; hind tibiæ with pale annulus; femora black.
Tryphon rufopectus Prov.
Mesopleura not red ..... 21.
21. Posterior tibiæ with white annulus.
Mesoleius (Tryphon) excavatus Prov.
Posterior tibiæ not annulate with white ..... 22.
22. Abdomen yellow with base of segments beyond 1 black.
Cteniscus crassipes Prov.
Abdomen not as above ..... 23.
23. Face and more or less of pleura yellow or white ..... 24.
Face and pleura not yellow or white ..... 26.
24. Abdomen entirely black; tarsi with pale annuli.
Mesoleptus annulatipes Prov.
Abdomen with white markings ..... 25.
25. Margins of apical abdominal segments white ..... **Eclytus robustus** Prov.
Sides of abdominal segments obscurely white; hind coxæ and apex of tibiæ black; metathorax carinate ..... **Mesoleptus fasciatus** Prov.
26. Clypeus white; abdominal segments 2–4 with transverse impressions.
Tryphon gaspesianus Prov.
Clypeus red; segments 1 and 2 rugose.
Tryphon (Erromenus) bedardi Prov.
27. Entire body uniformly ferruginous ..... **Mesoleptus uniformus** Prov.
Head and thorax black ..... 28.
28. Abdomen black at apex ..... **Tryphon tuberculifera** Prov.
Abdomen black only on basal segment ..... **Tryphon obscurus** Cress.

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CHECK LIST OF SPECIES.

Tribe METOPINI.

G. CULTRARIUS Davis.

1. rileyi *Marl.*

G. METOPIUS Panzier.

1. ultimatus *Davis.*
2. rufipes *Cress.*
3. basalis *Cress.*
4. errantia *Davis.*
5. xanthostigma *Ashm.*
6. pollinctorius *Say.*
7. nevadensis *Cress.*
   edwardsii Cress.
8. robustus *Cress.*
9. comptus *Cress.*
   laticinctus Cress.
10. scitulus *Cress.*
11. bellus *Cress.*
12. montanus *Cress.*
    concinnus Cress.
    mirandus Cress.
13. pulchellus *Cress.*

G. PSEUDOMETOPIUS Davis.

1. hageni *Cress.*
2. pulchripes *Prov.*

G. TRACHYDERMA Gravenhorst.

1. umbrosus *Davis.*
2. indigus *Davis.*
3. minoris *Davis.*

G. LETHADES Davis.

1. texanus *Ashm.*

G. THIBETOIDES Davis.

1. flosamoris *Davis.*

G. CATOCENTRUS Walsh.

1. philanthoides *Cress.*

Tribe EXOCHINI.

G. PERIOPE Curtis.

1. æthiops *Cress.*

G. ALCOCERUS Foerster.

1. trifasciatus *Cress.*

G. EXOCHOIDES Cresson.

1. texanus *Cress.*
   carolina Ashm.

G. CHORINÆUS Holmgren.

1. carinatus *Cress.*
   californicus Ashm.
2. constrictus *Davis.*
3. excessorius *Davis.*
4. texanus *Cress.*
5. opacitas *Davis.*
6. cariniger *Walsh.*
   flavifrons Ashm.
7. onitis *Davis.*
8. costatus *Davis.*
9. pusillus *Davis.*
10. pleturus *Davis.*
11. marlatti *Ashm.*

G. TRICLISTUS Foerster.

1. brunnipes *Cress.*
2. congener *Holmgr.*
3. curvator *Fabr.*
   fulvipes Cress.
4. pygmæus *Cress.*
5. apicalis *Cress.*
   terminalis Ashm.
6. ferrugineus *Ashm.*
7. thoracicus *Ashm.*
8. atriceps *Walsh.*
   rufomaculatus Prov.

G. METACŒLUS Foerster.

1. lævis *Cress.*

G. EXOCHUS Gravenhorst.

1. albiceps *Walsh.*
2. dorsalis *Cress.*
   a. annulicrus *Walsh.*
3. solitarius *Davis.*
4. pallipes *Cress.*
   evectus Cress.
   albifrons Walsh.
   xanthopsis Ashm.
   a. pleuralis *Cress.*
5. ostentatus *Davis.*
6. flavifrontalis *Davis.*
7. propinquus *Cress.*
8. atricoxalis *Cress.*
9. semirufus *Cress.*
   inflatifrons Prov.
   rufigaster Ashm.

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G. HYPERACMUS Holmgren.
1. ovatus *Davis.*

G. MIMA Davis.
1. washingtonensis *Davis.*

Tribe ORTHOCENTRINI.

G. BREPHOCTONUS Foerster.
1. californicus *Ashm.*

G. HYPOLEPTUS Foerster.
1. columbianus *Ashm.*

G. NEURATELUS Ratzeburg.
1. leucospis *Ashm.*

G. DELETER Foerster.
1. suffuscus *Davis.*
2. undulatus *Davis.*
3. obscurus *Davis.*

G. TAPINOPS Foerster.
1. emarginatus *Say.*
   pusillus Walsh.
   abdominalis Prov.
   californicus Ashm.

G. ATMETUS Foerster.
1. californicus *Ashm.*
2. nigritus *Ashm.*
3. carinatus *Prov.*
   tetrazonatus Ashm.

G. ORTHOCENTRUS Gravenhorst.
1. pilifrons *Prov.*
2. nigricoxus *Prov.*
   apicalis Ashm.
3. medialis *Davis.*
4. canadensis *Prov.*
5. trifasciatus *Walsh.*
6. lucens *Prov.*

G. STENOMACRUS Foerster.
1. intritus *Davis.*
2. hastatus *Davis.*
3. ?stigmatias *Walsh.*

G. CAMAROTOPS Foerster.
1. americanus *Ashm.*
2. asperus *Davis.*
3. premitus *Davis.*
4. ulmicola *Ashm.*
   flavosus Ashm.
   liriodendri Ashm.

Tribe BASSINI.

(This tribe was monographed and listed in vol. xxii.)

Tribe EXENTERINI.

G. DELOTOMUS Holmgren.
1. rufus *Prov.*

G. CTENISCUS Curtis.
1. clypeatus *Cress.*
2. consors *Cress.*
3. flavicoxæ *Cress.*
4. orbitalis *Cress.*

G. PICROSCOPUS Foerster.
1. canadensis *Prov.*
2. hullensis *Prov.*

G. DIABORUS Foerster.
1. maculiventris *Ashm.*
2. similis *Davis.*
3. ignipes *Davis.*
4. mediatus *Cress.*
5. nebraskaensis *Davis.*
6. ornatus *Walsh.*
7. dorsalis *Cress.*
8. nigrocephalus *Davis.*

G. EXCAVARUS Davis.
1. annulipes *Cress.*
2. vitticollis *Cress.*

G. AUDERIS Davis.
1. californicus *Cress.*
2. albilineatus *Walsh.*
   apicatus Prov.

G. ANECPHYSIS Foerster.
1. curvineura *Davis.*

G. EXYSTON Schiödte.
1. nigreo *Davis.*
2. marginatum *Prov.*
3. excelsus *Cress.*
4. flavens *Davis.*
5. nigroscutum *Davis.*
6. speciosus *Davis.*
7. boreotis *Davis.*
8. clavatus *Cress.*
   abdominalis Ashm.
9. contracta *Davis.*
10. articularis *Davis.*
11. humeralis *Davis.*

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12. abdominalis *Cress.*
    a. rufinus *Davis.*
13. variatus *Prov.*
14. venustus *Cress.*
15. politus *Davis.*

Tribe CTENOPELMINI.

G. RHORUS Foerster.

1. ottawaensis *Harrington.*
2. bicolor *Cress.*
    ruficornis Ashm.

G. LABROCTONUS Foerster.

1. articulatus *Cress.*

G. CTENOPELMA Holmgren.

1. primosa *Davis.*
2. indotata *Davis.*
3. nigricornis *Prov.*
4. sanguinea *Prov.*

G. ŒTOPHORUS Foerster.

1. nasoni *Davis.*
2. stretchii *Cress.*
3. osflavus *Davis.*
4. oculatus *Davis.*

G. SYMPHERTA Foerster.

1. burrus *Cress.*
2. unicolor *Cress.*

G. ECZETESIS Foerster.

1. paniscoides *Ashm.*

G. PRIONOPODA Holmgren.

1. ?begini *Ashm.*

G. EUCEROS Gravenhorst.

1. canadensis *Cress.*
2. obesa *Davis.*
3. couperii *Cress.*
4. frigidus *Cress.*
5. sanguineus *Davis.*
6. thoracicus *Cress.*
7. faciens *Davis.*
8. medialis *Cress.*
9. flavescens *Cress.*

G. SCOPIORUS Foerster.

1. gillettei *Davis.*
2. expansa *Davis.*
3. hiatus *Davis.*
4. quebecensis *Prov.*
    flavifrons Fyles.
5. analis *Cress.*
    occidentalis Cress.
6. subcrassus *Cress.*
    dilatus Prov.
7. extricatus *Davis.*

G. ERROMENUS Holmgren.

1. crassus *Cress.*
    tejonicus Cress.
2. tristis *Prov.*
3. dimidiatus *Cress.*
    atricoxus Walsh.
4. glabrosus *Davis.*
5. marginatus *Prov.*

G. MONOBLASTUS Hartig.

1. obscurellus *Cress.*
2. punctifrons *Davis.*
3. varifrons *Cress.*
    scutellaris Cress.
    frontalis Cress.
    dufresnei Prov.
4. aciculatus *Davis.*

G. POLYBLASTUS Hartig.

1. pedalis *Cress.*
2. tibialis *Cress.*
    annulipes Cress.
3. varitarsus *Grav.*
4. leviculus *Davis.*

G. SCOLOBATES Gravenhorst.

1. crassitarsus Grav.
    canadensis Harrington.

G. LATHROLESTES Foerster.

1. nasoni *Davis.*
2. similis *Davis.*

Tribe TRYPHONINI.

G. OCTOBLASTUS Foerster.

1. bidens *Davis.*
2. compressiventris *Cress.*
3. minimus *Cress.*
4. cultiformis *Davis.*
5. erodens *Davis.*

G. RHIMPHALEA Foerster.

1. brevicorpa *Davis.*

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G. ERYMA Foerster.
1. pilosa *Davis.*

G. ERIGLŒA Foerster.
1. opulenta *Davis.*
2. excavata *Davis.*

G. LABROSSYTA Foerster.
1. frontosa *Davis.*
2. bimaculatus *Ashm.*

G. OTLOPHORUS Foerster.
1. innumerabilis *Davis.*
   a. feria *Davis.*

G. TREMATOPYGUS Holmgren.
1. fusculosus *Davis.*
2. rotundatus *Davis.*
3. signatipes *Cress.*
4. scutellatus *Ashm.*

G. HOMOBIA Foerster.
1. cinctiventris *Ashm.*

G. BARYCEROS Provancher.
1. rhopalocerus *Prov.*

G. SYNŒCETES Foerster.
1. sedulus *Cress.*
2. festivus *Cress.*
3. propinquus *Cress.*

G. WESTWOODIA Provancher.
1. fumipennis *Prov.*

G. COSMOCONUS Foerster.
1. canadensis *Prov.*

G. QUADRIGANA Davis.
1. americana *Cress.*
   affinis Cress.

G. TRYPHON Fallen.
1. nigrum *Davis.*
2. seminiger *Cress.*
   pediculatus Prov.
   terminalis Ashm.
3. communis *Cress.*
   dionnei Prov.
   a. atripes *Davis.*
   b. clypeatus *Prov.*

G. ZACALLES Foerster.
1. magnus *Davis.*

G. APIMELES Foerster.
1. lusorius *Davis.*

G. EPACHTES Foerster.
1. basilicus *Davis.*

G. ADEXIOMA Foerster.
1. angularia *Davis.*

G. LAMACHUS Foerster.
1. ?contortionis *Davis.*

G. DIALGES Foerster.
1. fasciatus *Davis.*
2. frontalis *Davis.*
   a. tricolor *Davis.*
   b. rivalis *Davis.*

G. NŒMON Foerster.
1. californicus *Cress.*
2. lusorius *Cress.*
3. palmaris *Davis.*

G. VOLUCRIS Davis.
1. semirufus *Cress.*
   ruficinctus Cress.

G. CACOTROPA Foerster.
1. burrus *Cress.*
   predator Zabr.

G. SYNDIPNUS Foerster.
1. longipes *Davis.*

G. LISTROTA Foerster.
1. canadensis *Harrington.*

G. POLYTERUS Foerster.
1. franconiensis *Davis.*
2. olympiæ *Ashm.*

G. CALLIPHRURUS.
1. granulosus *Davis.*

G. BOËTHUS Foerster.
1. howardi *Davis.*
2. alaingens *Davis.*
3. glabranotus *Davis.*

G. ATITHASUS Foerster.
1. stellarius *Davis.*

G. SPUDÆA Foerster.
1. ovale *Davis.*

G. CAMPONASTES Foerster.
1. basilicus *Davis.*

G. PHÆSTUS Foerster.
1. gloriosus *Davis.*

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G. HOLMGRENIA Foerster.

1. tarsalis *Cress.*
2. cressoni *Davis.*
3. euuræ *Ashm.*
4. virginiensis *Ashm.*
5. lanceolata *Davis.*
6. picens *Davis.*

G. MESOLIUS Holmgren.

1. scapularis *Cress.*
2. convergens *Davis.*
3. nuperus *Davis.*
4. visoris *Davis.*
5. fidelis *Davis.*
6. consors *Davis.*
7. contractus *Davis.*
8. idahoensis *Davis.*
9. convexus *Davis.*
10. submarginatus *Cress.*
    canaliculatus Prov.
11. pulchranotus *Davis.*
12. mellipes *Prov.*
13. striatus *Davis.*
14. audax *Davis.*
15. puritanicus *Davis.*
16. pertinax *Davis.*
17. conformus *Davis.*
18. articularis *Davis.*

Tribe MESOLEPTINI.

G. SPANOTECNUS Foerster.

1. coloradensis *Ashm.*
2. iladus *Davis.*
3. discolor *Cress.*
4. decoloratus *Cress.*
    southwickii Ashm.
5. obscurellus *Davis.*
6. concolor *Cress.*

G. ECLYTUS Holmgren.

1. perennis *Davis.*
2. pleuralis *Prov.*

G. POLYONCUS Foerster.

1. platynus *Davis.*
2. mentalis *Davis.*
3. unicus *Davis.*
4. suburbe *Davis.*

G. SYCHNOLETER Foerster.

1. spatiosus *Davis.*

G. LAPHYROSCOPUS Foerster.

1. capitatus *Cress.*

G. POLYCINETUS Foerster.

1. limatus *Cress.*
2. solitarius *Davis.*

G. HOMASPIS Foerster.

1. albipes *Davis.*
2. rhadinus *Davis.*

G. NOTOPYGUS Holmgren.

1. cultus *Cress.*
2. excavatus *Davis.*

G. PROSMOSUS Foerster.

1. punctifrons *Davis.*
2. cymbaformus *Davis.*
3. elongatus *Davis.*

G. CATOGLYPTUS Foerster.

1. ?fucatus *Cress.*
    erectus Prov.
2. femoratus *Davis.*

G. GAUSOCENTRUS Foerster.

1. ?strigosus *Cress.*

G. PHOBETES Foerster.

1. albinopennis *Davis.*

G. RHÆSTES Foerster.

1. incessans *Davis.*
2. difficilis *Davis.*

G. STIPHROSOMUS Foerster.

1. obesa *Davis.*

G. DIZEMON Foerster.

1. regalis *Davis.*

G. IPOCTONUS Foerster.

1. depressus *Prov.*

G. MESOLEPTUS Gravenhorst.

1. tardus *Prov.*
2. nigralis *Davis.*
3. dispictus *Davis.*
4. lætus *Cress.*
5. riparius *Davis.*
6. albifrons *Cress.*
7. decens *Cress.*
8. zebratus *Davis.*
9. insidiosus *Cress.*
10. intimatus *Davis.*
11. nigropleuralis *Davis.*
12. innoxius *Cress.*

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13. egregius *Davis.*
14. striatus *Davis.*
15. torpens *Davis.*
16. scrupulosus *Davis.*
17. rufigaster *Prov.*

G. HADRODACTYLUS Foerster.

1. inceptus *Cress.*
2. elongatus *Cress.*
   annulatus Prov.
   a. coxatus *Davis.*
   b. femoratus *Davis.*
3. longicornis *Cress.*
4. ruficornis *Davis.*

G. ALEXETER Foerster.

1. antennatus *Prov.*
2. honestus *Cress.*
3. compos *Davis.*
4. notatus *Davis.*
5. seminiger *Prov.*
6. luteifrons *Cress.*
7. canaliculatus *Prov.*

G. OXYTORUS Foerster.

1. antennatus *Cress.*
   facetus Cress.

G. SYMPHOBUS Foerster.

1. pleuralis *Cress.*

G. ZEMIODES Foerster.

1. coloradensis *Davis.*
2. flavifrons *Cress.*
3. magnacornis *Davis.*

G. DIEDRUS Foerster.

1. areolatus *Davis.*
2. labradorensis *Davis.*

G. ASYMMICTUS Foerster.

1. nigrifrons *Davis.*
2. iridescens *Davis.*

G. CLEPSIPORTHUS Foerster.

1. rubiginosus *Cress.*
2. assiduus *Cress.*
3. flavidus *Davis.*
4. truncatus *Davis.*

G. EURYPROCTUS Holmgren.

1. bituminosus *Davis.*
2. albocinctus *Davis.*
3. albopunctus *Davis.*
4. petiolatus *Davis.*
5. sessilis *Davis.*
6. ramis *Davis.*
7. curvator *Davis.*
8. moyeni *Prov.*
   longicornis Prov.
9. puritanicus *Davis.*
10. dakotænsis *Davis.*
11. rufopictus *Davis.*
12. sentinis *Davis.*

Tribe PLECTISCINI.

G. ADELOGNATHUS Holmgren.

1. flavopictus *Davis.*
2. rotundiceps *Cress.*

G. NOTOMERUS Foerster.

1. glabrosus *Davis.*

G. CATASTENUS Foerster.

1. rufulus *Prov.*
2. glabrifrons *Davis.*
3. valerius *Davis.*

G. APERILEPTUS Foerster.

1. tropicus *Davis.*
2. penuria *Davis.*

G. MIOMERIS Foerster.

1. nasoni *Davis.*

G. HALICTUS Haliday.

1. ruficornis *Davis.*

G. PLECTISCUS Gravenhorst.

1. gracilis *Prov.*
2. niger *Prov.*
3. pleuralis *Prov.*

G. MEGASTYLUS Schiödte.

1. albocollaris *Cress.*
   albofasciatus Prov.
2. caseyi *Ashm.*

G. EUSTERINX Foerster.

1. negligere *Davis.*

G. PROCLITUS Foerster.

1. flagellatus *Davis.*
2. ? nasutus *Cress.*

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ERRATA.

Page 200, line 8, after but *add* not.
" 200, " 12, for *scrutatifrons* read *scutatifrons.*
" 207, " 27, add ♂ before — 7-9 mm.
" 209, " 8, add ♀ before — 4 mm.
" 216, " 2. from bottom, for **pluralis** read **pleuralis.**
" 227, " 1, for EXTENTERINI read EXENTERINI.
" 227, " 30, for **Anderis** read **Auderis.**
" 233, " 4. from bottom, for **ANDERIS** read **AUDERIS.**
" 234, " 6 and 18, for **Anderis** read **Auderis.**
" 270, " 38, for **Caliphrurus** read **Calliphrurus.**

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DESCRIPTIONS OF NEW SPECIES OF TRIGONALIDÆ, STEPHANIDÆ AND ICHNEUMONIDÆ.

BY G. C. DAVIS.

TRIGONALIDÆ.

Trigonalis sulcatus n. sp.

♂.—7 mm. Pilose, black, with orbital lines except above, diagonal spots beneath antennæ, another on mandibles, scape beneath, tegulæ, line above, humeral line above, stripe above anterior coxæ, spot on anterior pleuræ, stripes on mesonotum inside of parapsides, scutellums, band between meso- and metanotum, lateral apical spots on metathorax, apical margins on all abdominal segments, broad on second, and most of the legs, yellowish white; coxæ partly black and tibiæ and tarsi of hind leg with a rufous tinge; antennæ pale reddish brown; wings hyaline, except front apical margin, covering the marginal cell and a part of those bordering it; nervures and stigma reddish brown; body coarsely punctured, but with a faint shining reflection; parapsidal grooves deep, distinct; scutellum with a deep longitudinal groove in the middle; no carinæ on metathorax or basal segment of abdomen.

One specimen from Anglesea, N. J. (Prof. J. B. Smith).

STEPHANIDÆ.

Megischus floridanus n. sp.

♂ ♀.—♀ 20 mm.; ovipositor, 22 mm.; ♂ 6 mm. Black, with head, thorax and tarsi slightly reddish, decidedly so in ♂; guides of the ovipositor in ♀ with a broad white band near the apex; wings yellowish fusco-hyaline, nearer hyaline in ♂; front, vertex, thorax, hind coxæ and petiole strongly rugose and more or less reticulate, distinctly so on vertex and prothorax, and in ♀ on petiole, becoming finer toward apex; front above antennæ very rough and with the five tubercles distinct, the last two placed between the hind ocelli; heel segment of hind tarsi with large, dense white scopal pads.

Two specimens from Florida; collected June 15th by Mr. T. C. Priddey.

Megischus canadensis n. sp.

♀.—14 mm. Black, with cheeks beneath and posterior tarsi dirty yellow; four anterior legs with tibiæ, tarsi and apical trochanter, also hind trochanters, pale piceous; wings hyaline, nervures and stigma reddish brown; the sculpturing is different and much finer than in the preceding species; the head, including face, is circularly reticulate, very finely so on the occiput; prothorax coarsely reticulate; petiole irregularly transversely wrinkled; five spines of the head are more transverse, prominences and the anterior ocellus is in a broad, rather deep basin; ovipositor 18 mm., guides broken.

One specimen from Toronto, Canada; collected July 15th by Mr. T. C. Priddey.

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ICHNEUMONIDÆ.

Ichneumon pacificus n. sp.

♂.—12 mm. Black, with abdomen, except two apical segments, and legs beyond basal trochanter, rufous; antennæ tapering, verticilate; wings fuliginous, nervures black, stigma yellowish; areolet very broad above; body polished, coarsely punctured, metathorax rugosely so; lateral basal areas glabrous and with scarcely a puncture; postpetiole polished, slightly scabrous laterally; gastroceli large, very broad; abdomen subtruncate at apex; ventral fold visible nearly to apex.

One specimen from Seattle, Wash. (Prof. Trevor Kincaid).

Ichneumon pygmæus n. sp.

♀.—4 mm. Ferruginous, with occiput, thorax except scutellums, spot before, margins of prothorax, spot on pleuræ and apical portion of metathorax, extreme apex of hind tibiæ and petiole at base, black; tegulæ and annulus on antennæ white; scape large, yellow beneath; wings subhyaline, nervures and stigma brownish yellow; antennæ subclavate, about as long as head and thorax; segments short; body shagreened; thorax sparsely punctured; metathorax excavated behind and finely transversely reticulate, carinæ obsolete at base; abdomen slender and pointed; petiole slender, postpetiole shagreened as in the rest; legs subrobust, not twice as long as the abdomen.

Two specimens from Mt. Washington, N. H. (Mrs. Slosson).

Ichneumon faciens n. sp.

♂.—7 mm. Head and thorax black, legs and abdomen rufous; face, mouthparts, cheeks beneath, anterior orbits, orbital spot above, scape beneath, line in front of tegulæ, one beneath, apex of scutellum and anterior coxæ beneath, pale yellow; tegulæ, rest of scutellum and postscutellum, fulvous; antennæ blackish; wings hyaline, nervures and stigma brown; body rather closely and coarsely punctured; metathorax rugose, deeply and narrowly excavated behind and transversely reticulate; superior median area not defined, but mostly glabrous; abdomen slender; postpetiole punctured as with the rest, gastroceli broad and deep; legs rather slender, hind femora and coxæ slightly inflated.

One specimen from Colfax, Idaho (Prof. Aldrich).

Ichneumon nigrotergus

♀.—10 mm. Rufous, with the tergum of the abdomen beyond petiole, three basal segments of hind tarsi and extreme apex of hind tibiæ black or piceous black; antennæ longer than head and thorax tapering, dusky toward apex, yellowish in the middle; wings dark fuscous, nervures and stigma black; head and thorax polished, moderately punctured, metathorax most so and with subobsolete carinæ above; abdomen broad, tapering to a point posteriorly; apical segments finely punctured, postpetiole and base of second segment coarsely aciculate; ovipositor exserted, gastroceli deep; legs long and slender.

One specimen from Custer, So. Dakota (Prof. Aldrich).

Ichneumon blanchardi n. sp.

♀.—8 mm. Rufous, with apical margins of abdominal segments 2 and 3, apical half of 4, all of 5 and 6, upper half of posterior femora and trochanters and four posterior tibiæ except inner portion at base, black; hind tarsi piceous, apical seg-

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ment of abdomen reddish yellow; antennæ large, shorter than head and thorax, subclavate, fuscous toward tip, a yellow annulus in the middle; wings fuscous, stigma and nervures dusky rufous; body thickset, coarsely punctured, confluently so on second and third abdominal segments; head normal, face slightly inflated; mesonotum and scutellum flat, depressed; metathorax deeply excavated behind, margined in front by the arcuate second transverse carina; superior median area obcordate, glabrous; abdomen broad, oval, depressed, not strongly narrowed at apex; ovipositor exserted, postpetiole finely aciculate, gastroceli shallow, elongate; legs short, robust, anterior femora normal.

One specimen from Mt. Lafayette, N. H.; collected by the coleopterist, Mr. F. Blanchard, to whom the species is dedicated.

Hoplismenus transversus n. sp.

♂.—9 mm. Black, with abdomen except extreme base, femora and most of mesonotum, rufous; posterior coxæ and hind tibiæ beneath piceous; face, mouth-parts, orbits broken above, scape beneath, tegulæ, spot before, line beneath scutellum, prothoracic collar, four anterior coxæ and trochanters beneath and all tarsi, yellow; basal half of hind heel, most of their tibiæ and apex of their femora black; antennæ long, tapering, brown, yellowish beneath; wings subhyaline, nervures and stigma brown; second recurrent nervure mostly wanting; head small, narrowed beneath; thorax large, gibbous, coarsely and closely punctured; scutellum elevated and with lateral and a large transverse median carina; metathorax rugosely punctate and with large tuberculate spines, carinæ distinct; abdomen punctured, subpolished; segment 2 very broad and long, postpetiole strongly arched, slightly punctured; legs slender, more than twice as long as abdomen.

One specimen from Moscow, Idaho (Prof. Aldrich).

Amblyteles torontosus n. sp.

♀.—17 mm. Black, with broad annulus on antennæ, humeral line before tegulæ, line beneath tegulæ, scutellum, broad annulus on all tibiæ, and spot on three apical segments of abdomen, white; wings yellowish subhyaline, nervures and stigma reddish brown; body large, thickset, coarsely punctured, three basal segments of abdomen opaquely so; pilose, especially venter and apex of abdomen and tarsi; scutellum broad, oval; postscutellum aciculate; metathorax rugose, median areas very large, basal one wanting; postpetiole rugose, aciculate; abdomen broad and large, very obtuse at apex, venter of 1-3 with fold.

Two specimens from Toronto, Canada (Mr. Priddey).

Amblyteles tricolor n. sp.

♂ ♀.—11-13 mm. Black, with abdominal segments 2 and 3 ferruginous, and in ♀ postpetiole also; ♀ with annulus on antennæ, scutellum and spots on two apical segments of abdomen white, also more or less distinct supraorbital spots, spot on upper collar, line in front and another beneath tegulæ, white; rest of antennæ black, blackish fulvous in ♂ and black at base; wings yellowish fuscous, nervures brown, stigma yellow; body slender, coarsely and closely punctured; metathorax completely areolated, median areas no wider than lateral, basal small; abdomen slender, obtuse at tip, petiole aciculate in ♂, polished in ♀, three basal segments with fold.

Four specimens from South Dakota (Prof. Aldrich).

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Trogus apicatus n. sp.

♂.—15 mm. Black, with the abdomen deep blue; tibiæ and tarsi, anterior femora and apex of middle femora fulvous; wings fuliginous, purple reflection, and with a large white spot on the apex of each primary wing; nervures varying from reddish to black, stigma black; thorax punctured; prothorax, upper pleura and base of metathorax sparsely so; rest of metathorax strongly rugose, especially the median area, which is long and with a central longitudinal ridge, basal transverse carina prominent; scutellum conical with the apex bent backwards: abdomen broad, depressed, segments densely rugose and much constricted at base: a distinct median carina extends backward from base of 2.

One specimen from Crawford Notch, N. H. (Mrs. Slosson). In color this species resembles *fulvipes* Cress., but structurally and in the pale apical spot on the wings it differs considerably.

Platylabus incabus n. sp.

♀.—9 mm. Black, with abbreviated anterior orbits, cheeks around base of mandibles, tegulæ, spot before, apex of scutellums and small annulus on antennæ, distinctly white, but small; legs clear ferruginous, with hind tarsi and extreme apex of hind tibiæ black; wings hyaline, nervures brown, stigma black; antennæ long, slender, brown, with yellowish pubescence; body punctured, subpolished; scutellum with distinct, elevated lateral carinæ; metathorax with median and two lateral apical areas transversely reticulate; superior area glabrous; tergum of petiole polished, of postpetiole shagreened; abdomen depressed, ovipositor slightly exserted; legs large and strong.

One specimen from Moscow, Idaho (Prof. Aldrich).

Platylabus bakeri n. sp.

♂.—7 mm. Rufous, with head, prothorax, mesonotum and abdomen beyond second segment, black; broad orbital lines interrupted below, face except black transverse spot above clypeus, clypeus except central apical spot, mandibles, palpi, scape beneath, collar, humeral line, line beneath each wing, stripes on disc of mesonotum, scutellums, spots on posterior and anterior mesopleuræ, two spots on metathorax above hind coxæ, broad apical margin on all abdominal segments, more or less of four anterior coxæ and trochanters and annulus on antennæ, white; hind legs with their femora at apex, apical third of tibiæ behind and their tarsi piceous to black; antennæ dark brown, long as body; wings hyaline, nervures and stigma brown, areolet subsessile above; body punctured, subpolished; scutellum with strong lateral carinæ; metathorax rugose, superior area subpolished, apical areas irregularly reticulate, petiole of abdomen very broad, finely and rather sparsely punctured.

One specimen from Howard Baker, of Ann Arbor, Mich., and dedicated to him for the interest he has taken in collecting specimens in this family.

Platylabus foxi n. sp.

♂.—8 mm. Head and thorax black; dorsum of three basal segments of abdomen, extreme apex of hind tibiæ, three apical segments of hind tarsi and most of antennæ opaque piceous; rest of legs and abdomen mostly rufous; face, scape beneath, annulus on antennæ, broad orbits, cheeks, mouth-parts, collar, most of

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pectus, humeral line, tegulæ, stripe beneath, stripes on disc of mesonotum, stripes at basal angles of scutellum, scutellums, most of pleuræ and sternum, large spot covering metapleuræ, apical spot on metasternum enclosing the spines, but black in the center; petiole, except spot enclosing spiracles, broad margin (subapical in some) of all the following segments, four anterior coxæ and trochanters, large spot at base above and apex below on hind coxæ, most of their trochanters and two basal segments of hind tarsi, yellowish white; wings hyaline, nervures and stigma reddish brown; areolet subsessile at base; body closely punctured, subpolished, opaquely and rugosely punctured on metathorax and three basal segments of abdomen; carinæ on scutellum and metathorax prominent; spines on metasternum long, distinct, areas transversely reticulate; petiole of abdomen scabrous and with two prominent carinæ.

One specimen from Camden; N. J.; collected by Mr. Wm. J. Fox, and donated with other Ichneumonidæ. It gives me pleasure to name this beautiful species after him in honor of the many kindnesses shown me in this work.

Platylabus opacitas n. sp.

♂.—11 mm. Pale ferruginous and opaque owing to the body being closely and finely punctured and the dorsal part being shagreened also: sutures before and behind scutellums, band at base of segment 3 of abdomen and apex of posterior tibiæ, black; face, orbits, scape beneath, mouth parts, tegulæ, spots before and beneath, scutellums, four anterior coxæ and trochanters, basal half of posterior tibiæ and an annulus on hind tarsi, pale or reddish yellow; wings yellowish subhyaline with nervures and stigma varying from black to yellowish brown; areolet very large, pentangular; antennæ as long as body, tapering, blackish above toward apex; scutellum distinctly but not strongly margined; spines of metathorax prominent and in the areas bordering them the surface is roughly reticulate; median apical area long, rectangular, transversely and finely reticulate; basal part of metathorax rugose and without distinct carinæ; postpetiole very broad, shagreened and punctured; legs long and strong.

One specimen from Moscow, Idaho (Prof. Aldrich).

Eurylabus osrufus n. sp.

♀.—8 mm. Black, with lower half of head, antennæ, legs and four basal segments of abdomen deep rufous: wings fuscous, nervures and stigma reddish brown; body stout, punctured, subpolished; head nearly quadrate, very short between base of antennæ and clypeus; metathorax more closely punctured, completely areolated, second transverse carina very prominent; abdomen, including petiole, shagreened, oval; apex subcompressed, truncate; ovipositor slightly exserted, vertical to the apex and slightly curved upward.

One specimen from Illinois (Dr. Nason).

Eurylabus separatus n. sp.

♂.—10 mm. Black, with broad anterior and posterior orbital lines separated above and below, two dots on clypeus, inner half of antennal segments 9 13, humeral margin in front of tegulæ, line beneath tegulæ, scutellum and broad apical margins of abdominal segments beyond 3, white: anterior tibiæ and tarsi and extreme apex of abdominal segments 2 and 3 reddish yellow; wings faintly

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subhyaline, nervures and stigma brown; body polished, moderately punctured; scutellum oval, transversely elevated: metathorax broad, completely areolated, apical median area elongate, largest, and is transversely and coarsely reticulate: abdomen depressed, broad on median segments; gastroceli large, deep and reticulate; postpetiole broad, polished, sparsely punctured.

One specimen from Algonquin, Ill. (Dr. Nason).

Eurylabus commodus n. sp.

♂.—8 mm. Black, with abdomen beyond extreme base of petiole and legs beyond basal trochanters, rufous; extreme tips of hind tibiæ fuscous; face, except two submedian lines reaching from antennæ to sides of clypeus, tegulæ, spot before and scutellums, brownish yellow; antennæ piceous beneath; wings subhyaline, nervures brown, stigma yellowish; head and thorax subpolished, closely punctured; scutellum somewhat elevated, rounding; metathorax rugosely punctured, carinæ rather small, subspinose; abdomen depressed, rather broad, very closely punctured; petiole and base of segment 2 rugosely punctate, postpetiole rugosely aciculate.

One specimen from Washington (Prof. O. B. Johnson).

Exolytus dakotæensis n. sp.

♂.—7 mm. Black to piceous, with clypeus, mandibles, palpi, prothorax, scutellum, legs and 2-3 basal segments of abdomen, rufous; remainder of abdomen and thorax piceous; tegulæ yellow, antennæ uniform reddish brown; wings yellowish fuscous, nervures and stigma brown, the latter shorter and more triangular than usual and with radius starting back of middle; areolet complete, pentangular; parapsidal depressions very large, broad and deep and uniting in a broad basin before scutellum; metathorax areolated as usual, but only rugulose and punctured: tergum of petiole with four small, distinct, parallel carinæ reaching to the apex, two lateral and two median: legs short and thickset, especially posterior femora and coxæ.

One specimen from South Dakota (Prof. Aldrich).

Exolytus aciculatus n. sp.

♂ ♀.—7-9 mm. Black, with mandibles, legs, and more or less of abdominal segments 2 and 3, rufous; antennæ black to piceous with basal portion beneath ferruginous: tegulæ yellow; apical median area of metathorax long, transversely reticulate; petiole of abdomen slightly inflated behind spiracles and finely, longitudinally aciculate or wrinkled: wings hyaline, nervures and stigma brownish red; areolet with outer nervure pellucid or wanting.

Five males and three females from Illinois (Dr. Nason), New York and Michigan.

Exolytus glaucus n. sp.

♂ ♀.—7-10 mm. Black, with mandibles, antennæ at base, legs, and segments 2 and 3 of abdomen, rufous; palpi and tegulæ yellowish: metathorax as in *aciculatus;* abdomen broad, depressed in ♂, in ♀ slender, compressed toward apex, ovipositor exserted, curved under; petiole in both sexes long, slender, scarcely perceptibly widening behind spiracles, smooth and polished; wings elongate; hyaline; areolet with outer nervure pellucid.

One female and two males from Michigan, Illinois and New York.

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Exolytus brevis n. sp.

♀.—5 mm. Black, with mouth-parts including clypeus, obscure anterior orbital lines, scape, tegulæ, spot before, legs and abdominal segments 2 and 3, ferruginous; antennæ and nervures and stigma reddish brown; wings hyaline, areolet complete, pentangular; metathorax as in *aciculatus;* abdomen with the petiole polished, gradually widening toward apex, arched near spiracles and subequal in length with segments 2 and 3 which, with the following, are oval and subcompressed.

Three specimens from Illinois, Michigan and Mt. Washington, N. H. (Mrs. Slosson).

Exolytus sericeifrons n. sp.

♀.—8 mm. Black, with antennæ at base, mandibles, palpi, tegulæ, spot before and four anterior legs, yellowish white; median longitudinal stripe extending from apex of petiole to apex of segment 5 and widening toward apex, rufous; hind legs rufous with apex of femora, base of tibiæ and their tarsi dusky; wings hyaline, nervures and stigma reddish; areolet complete, pentangular; head and thorax curved with white pile, face very white; head very large, broader than thorax; metathorax small, completely areolated, which makes the apical median area as broad as long, areas shagreened; petiole of abdomen polished, slightly arched, not widened behind spiracles.

Two specimens from Washington.

Exolytus cultus n. sp.

♀.—5–8 mm. Black, with median portion of abdomen more or less rufous, usually segments 2-5; legs rufous, with coxæ and trochanters black, hind tarsi and base of their tibiæ dusky to black; tegulæ, antennæ and mouth-parts black, mandibles sometimes piceous; wings subhyaline, outer nervure of areolet wanting; metathorax as in *aciculatus;* petiole short, polished, arched toward apex; abdomen oval, compressed toward apex.

Three females from Colorado and Illinois (Dr. Nason).

Exolytus petiolaris n. sp.

♂.—5 mm. Black, with mandibles, palpi, legs beyond trochanters and abdominal segments 2 and 3 rufous; antennæ and tegulæ black; petiole very long, smooth and slender; metathorax as in *aciculatus*, except that the upper part of the petiolar area is glabrous; wings hyaline, outer nervure of areolet pellucid.

One specimen from Colorado.

Exolytus alamagnus n. sp.

♂.—5 mm. Black, with clypeus, mandibles, palpi and tegulæ, yellow; scape, except most of posterior coxæ, most of abdominal segment 3, and venter at base, rufous; wings large, reddish hyaline, nervures and stigma reddish brown, outer nervure of areolet wanting; metathorax small, rugose, faintly carinate and with the two median longitudinal carinæ close and parallel; petiole of abdomen long, nearly straight and rugose on tergum; entire body is finely pilose.

One specimen from Colorado.

Exolytus borealis n. sp.

♂.—5 mm. Black, with palpi and tegulæ yellow; scape, mandibles and abdominal segments 2 and 3, rufous; four anterior legs and posterior coxæ and trochanters reddish yellow, remainder of hind legs fuscous, femora beneath ru-

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fous; flagellum brownish red; wings large, subhyaline, nervures and stigma reddish brown, areolet with outer nervure wanting; metathorax polished, subreticulate toward apex; petiole smooth, except median groove.

One specimen from "Hudson Bay Territory."

Exolytus concamerus n. sp.

♀.—7 mm. Black to piceous, with apical half to three-fourths of abdominal segments rufous; posterior coxæ with an elongate stripe above, rest of legs black or piceous; antennæ black to piceous with white annulus beyond middle; mouthparts piceous to rufous; metathorax short, rugose, carinæ small, subtuberculate; petiole slender, polished, strongly arched from near the base to the apex; wings yellowish hyaline, nervures and stigma pale, latter small; areolet complete, subpentangular.

Two specimens from Mt. Washington, N. H. (Mrs. Slosson).

Exochilum petiolatum n. sp.

♀ ♂.—15 mm. Black; head, except large spot enclosing ocelli and tips of mandibles, which are black, brownish yellow; antennæ fulvous, tapering, about half as long as body and from 45 to 50 jointed; thorax in ♀ mostly dark rufous, with margin of mesonotum, spot in front of scutellum, entire sternum and basal and apical portion of metathorax, black; in the ♂ the thorax is mostly black, with scutellum and central meso- and metapleuræ rufous; upper prothorax and mesonotum piceous; abdomen black, with apex of first, lateral portion of second and base of third segments dusky rufous; legs with four anterior tibiæ and tarsi and posterior tarsi, and tibiæ except at apex, yellow; hind femora except base, and apex of tibiæ, black; in the ♀ the four anterior femora and trochanters are tinged with rufous, the anterior coxæ are piceous and the four posterior pairs are black, the posterior trochanters and base of femora are dusky rufous; in ♂ the four anterior legs are entirely yellow, the posterior trochanters and basal third of femora reddish yellow; wings fuliginous, nervures and stigma black; third discoidal cell not narrowed at base; median and submedian cells of equal length on the externo-median vein; head and thorax coarsely punctured; clypeus truncate, labrum visible; no parapsidal grooves; scutellum narrow, prominent, punctured anteriorly; metathorax coarsely reticulate, broadly depressed above; abdomen polished, strongly compressed, petiole not enlarged on apical portion nor constricted in front of the spiracles; three basal tarsi of posterior legs very thick and large.

Three specimens from South Dakota (Prof. Aldrich).

Anomalon fuliginosa n. sp.

♀.—17 22 mm. Thorax black, abdomen blue-black, shining; face, mouthparts, scape beneath, broad orbital lines each side of antennæ, cheeks behind lower half of eyes, dot above eyes, apex of abdomen and most of anterior legs, yellow; antennæ fulvous to pale red; clypeus drawn to a sharp central point in front; head, pro- and mesothorax coarsely punctured and covered with a brown pile; parapsidal grooves present, scutellum flat; metathorax coarsely reticulate; wings fuliginous, iridescent, nervures and stigma brown; third discoidal cell not narrowed at base; legs slender, hairy; abdomen strongly compressed, blue-black, except apical half of apical segment; petiole slender, much enlarged behind spiracles; ovipositor 3 mm.

Two specimens from Michigan.

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Anomalon clavatum n. sp.

♀.—20 mm. Head yellow, with vertex and occiput black, and most of cheeks behind eyes rufous; scape black above, yellow beneath; head large, deeply sunken above antennæ; face oval, clypeus broadly rounding at tip and with only a minute central projection; thorax piceous, almost black on sternum and behind scutellums; mesonotum rather coarsely punctured, without parapsidal grooves, but with coarse, transverse aciculations in front of scutellums; pleuræ shining, coarsely punctured; scutellum flat, punctured same as mesopleuræ; postscutellum oval, transversely aciculate; between postsctellum and base of secondary wings the space is coarsely diagonally aciculate; metathorax coarsely reticulate and traversed longitudinally by a deep narrow channel, which is transversely reticulate; wings yellowish fuliginous, with basal half of submedian cell and all of costal cell on hind wings a bright translucent yellow; veins brown, stigma reddish, yellow at base; third discoidal cell narrowed at base; humeral cross-vein of hind wing broken behind the middle, four anterior femora and trochanters rufous, coxæ piceous, tibiæ and tarsi yellow; hind legs with coxæ, femora and apical third of tibiæ black; trochanters and basal part of tibiæ ferruginous, tarsi yellow; petiole of abdomen rufous, slender, concave above, postpetiole scarcely enlarged; second segment piceous above, compressed; remainder of abdomen clavate, segments finely punctured, black, and strongly compressed; whole body and legs pilose; ovipositor exserted about 2 mm.

One specimen from South Dakota (Prof. Aldrich).

Anomalon smithii n. sp.

♂.—16 mm. Head, prothorax, tegulæ and large spot beneath on mesopleuræ, reddish brown; mandibles, vertex and scutellum piceous; four anterior legs, posterior tarsi and antennæ fulvous; posterior tibiæ dusky rufous on basal two-thirds, remainder of the body and legs black; wings a deep fuliginous with bluish reflection, nervures and stigma black; third discoidal cell narrowed at base; humeral cross-vein of hind wing broken below the middle; head shining, not coarsely punctured; clypeus rounded to the central point; antennæ long (about 50 joints); thorax very coarsely punctured, parapsidal grooves distinct, uniting some distance in front of scutellum; median lobe of mesonotum with a broad, deep, central depression; transverse aciculations in front of scutellum; scutellum and postscutellum coarsely punctured; metathorax coarsely reticulated, central depression broad and shallow; abdomen not strongly compressed; petiole slender, considerably broadened at spiracles and then narrowed toward apex.

One specimen from New Brunswick, N. J., and dedicated to Prof. J. B. Smith for the assistance in this work that he has given me.

Anomalon elongatum n. sp.

♀ ♂.—22-24 mm.; antennæ 18 mm. and about 65-jointed. Dusky rufous, vertex, occiput, all of the dorsum of pro- and mesothorax back to scutellum, sternum, spot on upper posterior mesopleura, ventral, basal and apical portions of metathorax, four anterior coxæ beneath, hind coxæ, basal trochanters, femora, tibiæ at apex, dorsum of second abdominal segment, apex of the third, and all of the following segments, black; face, mouth-parts, scape beneath and posterior tarsi yellow; antennæ long, fulvous, blackish on basal segments above; cheeks polished, sparsely punctured above; face coarsely and closely punctured and with quite deep and broad parallel grooves extending beneath the antennæ to the

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clypeus, and an elevated ridge between them; clypeus with a sharp outward-curved central spine; thorax closely and rather coarsely punctured; without parapsidal grooves; transverse aciculations in front of scutellum strongly curved with convex side toward scutellum; scutellum flat, punctured and without central groove; metathorax strongly reticulate and with scarcely a median longitudinal depression; abdomen long, slender, strongly compressed; wings fuscous, nervures brown, stigma slender and flesh color; third discoidal strongly narrowed at base; humeral cross-vein in hind wing broken above the middle.

Two specimens from Brookings, S. Dak. (Prof. Aldrich), and Franconia, N. H. (Mrs. Slosson).

Anomalon bipartitana n. sp.

♂.—24 mm.; antennæ 18 mm. and about 65-jointed. Rufous, with vertex, occiput, dorsum of prothorax, stripe on the three lobes of mesonotum, sternum, small diagonal stripe on upper posterior mesopleuræ, metasternum, lower anterior portion of metapleuræ, basal suture of metanotum, dorsum of second abdominal segment, three apical segments, posterior coxæ, basal trochanters and apex of hind tibiæ, black; posterior femora piceous; face, anterior orbital lines, scape beneath, mouth-parts, cheeks, scutellum, four anterior legs, posterior tibiæ except apex, apical trochanters and tarsi of hind legs, yellow; antennæ fulvous, blackish at base; wings yellowish, subhyaline, nervures reddish brown, stigma color of antennæ; third discoidal strongly narrowed at base; humeral cross-vein of hind wing broken close above the middle; head rugose above antennæ; cheeks polished, coarsely but sparsely punctured; face coarsely punctured, but polished; two parallel grooves beneath antennæ distinct and extend to clypeus when they diverge into still stronger grooves around the clypeus, clypeus with central apical tooth and with deep central depression above; thorax coarsely punctured; parapsidal grooves present, reticilate; scutellum oval, with a deep central longitudinal groove; transverse aciculations before scutellum, few, straight, bent only at apices; metathorax elongate at apex, strongly reticulate, concave above near apex; abdomen long, slender, moderately depressed.

One specimen from Michigan.

Anomalon suburbe n. sp.

♀.—17 mm. Rufous, with large spot on vertex, occiput, apex of mandibles, prothorax, anterior median stripe on mesonotum, upper posterior angle of mesopleura, meso- and metasternum, basal portion of metathorax, region around the scutellum, spot on apical dorsum of metanotum, dorsum of second abdominal segment, ventral and dorsal portions of segments 4-6, inner basal portion of posterior coxæ, upper portion of basal posterior trochanters and apical fifth of posterior tibiæ black; antennæ short, 44-jointed, reddish brown, paler beneath toward base, four anterior tibiæ and all of the tarsi yellow; wings hyaline, nervures brown, stigma rufous; third discoidal cell not narrowed at base; second recurrent nervure strongly bent in the middle; submedian cell slightly longer than median on externo-median nervure; head and thorax coarsely punctured, pilose; face broadly concave, clypeal groove shallow, clypeus with a median tooth strongly curved outward; scutellum punctured, oval and not aciculate in front of it; no parapsidal grooves; metathorax rugose, but not or indistinctly reticulate and without median depression; abdomen slender, compressed, slightly oval; petiole scarcely broadened behind the spiracles; legs slender.

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♂.—Differs in having the thorax entirely black (the scutellum varies from entirely black to entirely yellow); the legs and face are yellow instead of rufous: the basal portion of middle coxæ, all except ventral portion of hind coxæ and upper portion of posterior femora are black; the antennæ are darker with scape yellow beneath.

One female and five males from Julietta, Idaho (Prof. Aldrich).

Anomalon basilicon n. sp.

♀.—15 mm.; antennæ 10 mm. Rufous, with upper half of head, except pale orbital spots above, occiput, spot on upper prothorax, stripe beneath wings, meso- and metasternum, spot before scutellum, portion around scutellums, spots on mesonotum, posterior coxæ, basal posterior trochanter, apical half of posterior tibiæ and dorsum of second abdominal segment, black; face, entire scape, mouth-parts, lower half of cheeks, and anterior coxæ and trochanters, yellow; tarsi and four anterior tibiæ fulvous; wings large, subhyaline, nervures and stigma brown; third discoidal cell not narrowed at base; second recurrent and transverse median nervures uniting considerably back of the transverse cubital and basal respectively; humeral cross-vein broken far below the middle; head subpolished, strongly punctured above; face with median vertical ridge; clypeus with the apex elongate and elevated; thorax coarsely and strongly punctured; parapsidal grooves uniting before scutellum; scutellum broad, flat and with slight median longitudinal groove; metathorax reticulate, protruding but little at apex; abdomen long, slender, strongly compressed; postpetiole short, somewhat widened; ovipositor 3 mm.; legs slender, with hind tibiæ and tarsi inflated, the latter decreasing toward apex.

One specimen from Moscow, Idaho (Prof. Aldrich).

Anomalon clavipes n. sp.

♂.—7 mm.; antennæ 4.5 mm. Black, with face, orbital lines (broken above), scape beneath, mouth-parts, cheeks beneath, tegulæ, long line above on prothorax, four anterior coxæ and trochanters, apical trochanter of hind legs and base of basal trochanter, lemon-yellow; abdomen black, with segments 3-5 rufous, dusky on the dorsum, four anterior legs pale rufous; posterior legs with the coxæ, basal trochanter, base and apex of the femora, apical third of tibiæ and tarsi, except basal segment, black; hind tibiæ yellowish at base and with a dusky band margining this; remainder of hind legs dark rufous; antennæ black; wings hyaline, nervures and stigma brown; third discoidal cell narrowed to a point at base so that the cubital and transverse discoidal nervures unite as one; the cubital nervure between the second recurrent and transverse cubital nervure is longer than the latter and broken at juncture with second recurrent; transverse median nervure unites considerably back of basal; head punctured, face polished, sparsely punctured, clypeus not separated, pointed; thorax rugosely punctured, metathorax flat and strongly reticulate; parapsidal grooves indistinct; upper pleuræ longitudinally rugose; abdomen slender, strongly compressed beyond second segment; first two segments cylindrical, straight; spiracles on first segment tuberculate, but the postpetiole is not widened; legs slender; hind femora short, curved near apex and incrassate, not half again as long as the basal trochanter, which is much longer than the second; hind tibiæ very slender at base, but very large and thick toward apex; tibial spurs small; basal segment of hind tarsi large and as long as the femora.

One specimen from Agricultural College, Michigan, May 25th.

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Anomalon alpinus n. sp.

♀.—13 mm.; antennæ 12 mm. Pale rufous, base of antennæ, median portion of vertex above, meso- and metasternum and oblique stripe beneath wings, black; face, scape beneath, mouth-parts, lower half of cheeks, anterior coxæ and four anterior trochanters, yellow; remainder of legs and the abdomen entirely rufous; wings small, subhyaline, nervures and stigma brown; third discoidal cell narrowed to a point at base; second recurrent nervure uniting considerably back of transverse cubital and transverse median considerably back of basal; humeral cross-nervure broken a little below the middle; head large, pilose, coarsely punctured; face broad, flat, sloping under; clypeus pointed, upper tooth of mandibles longest; thorax coarsely, but rather sparsely punctured; mesonotum with broadly rounding furrows uniting before scutellum; scutellum broad, flat, gradually declivous; metathorax distinctly reticulate, with median longitudinal depression and with apical portion elongate, so that the part beyond the coxal attachment is as long as the basal; abdomen slender, strongly compressed, postpetiole scarcely widened, ovipositor 1.5 mm.; legs long and slender, the heel segment not enlarged.

One specimen Mt. Craig, Idaho (Prof. Aldrich).

Anomalon rotundus n. sp.

♂.—19 mm.; antennæ 10 mm. Dark rufous to piceous, with median portion of vertex, occiput, entire prothorax, meso- and metasternum, stripe beneath wings, elongate stripe on middle lobe of mesonotum, portion surrounding scutellum, base of metathorax, stripe on dorsum of second abdominal segment and on hind legs, the upper portion of coxæ, basal trochanter and femora and the apical half of tibiæ black, or piceous black; wings hyaline, nervures and stigma yellowish; stigma larger than usual; third discoidal cell not narrowed at base, second recurrent nervure uniting with the transverse cubital, transverse median nervure uniting much back of the basal, humeral cross-nervure broken at or a little below the middle; body large and heavy set, pilose; head coarsely punctured, front concave; clypeus pointed and with a dividing groove at base; thorax large, broadly rounded and coarsely punctured; no parapsidal grooves; scutellum large, rounding; metathorax coarsely punctured, but not reticulate; abdomen large, compressed, but not strongly so; petiole comparatively short and with postpetiole slightly enlarged.

One specimen from Lawrence, Kansas (Prof. Aldrich).

Anomalon edemæ n. sp.

♂ ♀.—14-17 mm. Ferruginous, with vertex, occiput, mesonotum except margins and parapsides, scutellum at base in ♀, disc of metathorax, sternum, stripe beneath wings (the two last nearly meeting in ♀), disc of first two abdominal segments, and, on the hind legs, apical half of tibiæ, coxæ and trochanters black, the last two yellow beneath in ♂: face, mouth, scape beneath, orbital spots above, cheeks beneath; pectus, tarsi and tibiæ, except apex of hind ones, more or less pale yellow; hind femora above, and apex above in ♀, dark red; antennæ as long as body, brown; wings hyaline, nervures and stigma brown: discoidal cell not narrowed at base; head and thorax densely punctured; clypeus strongly pointed in front; parapsidal grooves broad, shallow and uniting in a shallow basin before scutellum; space before scutellum opaque, finely punctured; metathorax reticulate, rugose at base; postpetiole slightly widened, broadest at spiracles; abdomen strongly compressed.

Two specimens from Michigan and bred from pupæ of *Edema albifrons*.

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Trichoma reticulata n. sp.

♀.—10 mm.; ovipositor 5 mm. Head yellow, slightly tinged with rufous behind eyes; vertex, except orbital lines, and occiput black; antennæ and teeth of mandibles reddish brown; eyes, face and cheeks hairy; thorax dark rufous, with stripe on central anterior mesonotum, prothorax except triangular portion in front of tegulæ, sternum and base and apex of metathorax, black; mesonotum has parapsidal carinæ instead of grooves; each side of these carinæ the surface is reticulate; rest of mesonotum is coarsely punctured; pleuræ shining, finely punctured; scutellum longitudinally concave, elevated posteriorly and traversed by a sharp transverse carinæ; metathorax coarsely reticulate; wings yellowish hyaline, nervures and stigma reddish brown, areolet wanting, the second recurrent nervure uniting with the cubital far back of the cubito-discoidal junction, third discoidal cell but little narrowed at base; legs rufous, anterior legs paler, posterior tarsi yellow, apex of femora and apical half of tibiæ on posterior legs, black; legs slender, posterior femora somewhat swollen; abdomen slender, strongly compressed; rufous, black on dorsum of segments two and five; most of segments six and seven piceous.

One specimen from Agricultural College, Michigan. Taken in a swamp July 25th.

Campoplex relectum n. sp.

♀.—11 mm. Black, with apex of abdominal segment 1, apical third of 2 and all of the following segments, rufous; hind legs black with their tibiæ fulvous except extreme base and apex, which are black; intermediate tibiæ and apex of their femora and all of front legs except coxæ and trochanters, fulvous; wings subhyaline, iridescent, areolet large, petiolate; head and thorax pilose, densely punctured; metathorax with lateral longitudinal ridges, between which it is broadly concave; abdomen strongly compressed, spiracles of petiole two-thirds from the base.

One specimen from Franconia, N. H. (Mrs. Slosson).

Campoplex occidentalis n. sp.

♂ ♀.—8 mm. Black, with segments 3-5 of abdomen rufous; four anterior legs yellow with their femora fulvous; hind legs black with base of femora rufous and tibiæ and tarsi piceous; mandibles, palpi and tegulæ yellow; wings hyaline, nervures and stigma dark brown; areolet petiolate; body pilose, head and thorax closely punctured; metathorax without carina.

Several specimens from Seattle, Wash. (Prof. O. B. Johnson).

Zachrasta obesa n. sp.

♀.—10 mm.; ovipositor 3 mm. Black, with mandibles, anterior legs beyond trochanters, middle legs from apex of femora, broad annulus on posterior tibiæ, abdominal segments 3-5 and apical half of 2, ferruginous; wings hyaline, nervures and stigma reddish brown; areolet large, petiolate; head and thorax pilose, finely and closely punctured, less closely on pleuræ; head flat, disc-shaped, eyes emarginate, antennæ with short segments and but little longer than head and thorax; thorax large, gibbous, but little longer than broad; metathorax without carinæ and with broad, longitudinal, concave depression; spiracles large, linear;

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abdomen large, oval, not strongly compressed; postpetiole strongly inflated both vertically and laterally; legs large and strong.

One specimen from Michigan.

Casinaria compacta n. sp.

♀.—9 mm.; ovipositor 1.5 mm. Black, with abdomen rufous on apical half of segment 1, all of 2 and 3, dorsum of 4 and 5, except apex; black on all the following; mandibles, palpi, tegulæ, broad outer stripe on all tibiæ, the same continued onto four anterior tarsi and annuli at base of hind tarsi, yellowish white; rest of legs rufous except coxæ, which are black; wings subhyaline, areolet petiolate; head and thorax pilose, punctured; head disc-shaped; metathorax with deep, broad, longitudinal depression and feebly carinate toward apex; abdomen oval, long, subcompressed; petiole short, apical half much dilated.

One specimen from Colorado (Prof. Gillette).

Habronyx (?) **flavistigma** n. sp.

♂.—15 mm.; antennæ 12 mm. Black to piceous, with lower half of head, sutures of thorax and margins, tegulæ, scutellum and lower apical portion of metathorax, rufous; abdomen black, four anterior legs rufous, middle coxæ and basal trochanter piceous; hind legs black, with basal half of tibiæ and the tarsi fulvous; antennæ black, scape rufous beneath; wings subhyaline, nervures blackish, stigma yellow; third discoidal cell not narrowed at base; second recurrent nervure uniting considerably back of the transverse cubital, the same with the transverse median and the basal nervures; humeral cross-nervure broken far below the middle; head large, coarsely punctured above; clypeus elevated and strongly pointed; lower tooth of mandibles short and small; thorax coarsely and closely punctured, mesonotum trilobed; scutellum flat, slightly oval; metathorax flat, transversely reticulate and with broad, median, and two lateral longitudinal grooves; abdomen slender, strongly compressed, postpetiole moderately enlarged: legs long and slender; posterior tibiæ large toward apex, and tarsi large, becoming smaller toward apex; claws rather large and strongly pectinate.

One specimen from New York (H. Meeskie).

Ateleuti elongatus n. sp.

♀.—11 mm.; ovipositor 6 mm. Head and thorax black, except clypeus, mandibles and palpi, which are dark rufous; legs rufous, with trochanters, tibiæ and tarsi of hind legs, black; abdomen black, with segments 3 to 5 rufous on apical half and 5 and 6 rufous at base; antennæ long, slender, many jointed; wings fusco-hyaline, nervures and stigma brown; areolet wanting, the transverse cubital vein being long and straight and the longitudinal veins continuing from it at right angles; marginal cell narrow and broadly rounded at apex; third discoidal cell somewhat narrowed at base; humeral cross-nervure of hind wing bent somewhat, but not broken; head transverse, face strongly rugose, the ridges converging to the antennæ; clypeus small, separated; thorax subquadrate, greatly elongate as in some of the Pimplinæ, finely and closely punctured, making it opaque; no parapsidal grooves, scutellum flat; metathorax considerably produced beyond insertion of hind coxæ, completely areolated, the basal median area small, while the two basal areas each side of it are large and nearly circular, the middle row

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of areas are elongate and nearly rectangular; abdomen petiolate, finely punctured, shining on apical segments; spiracles of petiole placed just back of middle and from these back the petiole is greatly broadened; second segment depressed, oval and with a large central ridge beneath; remaining segments considerably compressed, but oval from above and tapering to a point at apex; ovipositor ventral; egs slender, coxæ elongate, tibiæ longer than femora and trochanters and tarsi longer than tibiæ.

One specimen from Atlantic City, N. J. (Prof. J. B. Smith).

Pyrachmon idahoensis n. sp.

♀.—10 mm.; ovipositor 4 mm. Black, pilose; mandibles, palpi and tegulæ whitish; legs rufous, with the coxæ and posterior tibiæ and tarsi black; wings fusco-hyaline, veins and stigma black; areolet triangular, petiolate, incomplete on the outer nervure: head large, smooth, finely punctured; mandibles set beneath and entirely within the surrounding mouth parts; antennæ black, slender; mesonotum elevated anteriorly and with parapsidal grooves indicated; metathorax oval, and with the central area extending from apex, where it is widest, to nearly the base; this area is transversely rugose and distinctly surrounded by strong carinæ; the remainder of the metathorax is smooth and finely punctured: abdomen shining, finely punctured; petiole broad, compressed beyond second segment; the tibiæ are not pinched at the base.

Two specimens from Moscow, Idaho (Prof. Aldrich). This species will probably belong to a new genus.

Pyrachmon aldrichi n. sp.

♂ ♀.—11 mm.; ovipositor 5 mm. Black, with mandibles, palpi and tegulæ whitish; legs rufous, with coxæ, posterior tibiæ and tarsi black, the last two piceous beneath; the ♂ differs in having all of the face, except median line, and four anterior trochanters, white; wings subhyaline, nervures and stigma blackish; areolet large, petiolate; head cubical, oval in front, shagreened, pilose; eyes small, mandibles sunken; antennæ very slender; thorax punctured and pilose: metathorax areolated, median apical area somewhat rugose; abdomen finely shagreened, oval, moderately compressed: petiole short, broad on apical half.

Four females and one male from Moscow, Idaho. From Prof. Aldrich, after whom I take pleasure in naming this fine species.

Omoborus kincaidi n. sp.

♂.—10 mm. Black, with apical spot on mandibles, abdomen beyond middle of second segment and legs beyond trochanters, rufous; wings subhyaline, nervures and stigma black, areolet petiolate; head large, transverse; face opaquely punctured and covered with long white pile; mandibles sunken, antennæ large and rather long; thorax short, broad, punctured and pilose; metathorax oval, carinate, but lacking the basal transverse one, median apical area coarsely punctured; abdomen oval, compressed; petiole nearly straight, broad, and depressed on apical third; legs stout.

One specimen from Seattle, Wash. Sent by Prof. Trevor Kincaid, to whom I take pleasure in dedicating this interesting species.

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Canidia luctus n. sp.

♀.—9 mm. Black, with legs beyond trochanters ferruginous; hind tarsi and their tibial spurs dusky: palpi and anterior edge of mandibles dusky rufous; wings fuliginous, beautifully iridescent; nervures and stigma dark brown; areolet petiolate; head and thorax polished, but closely punctured, especially on mesonotum and face; pile scarcely visible; head small, tapering toward the mouth, so that from the front it is triangular; antennæ tapering, shorter than the body; thorax short, subrotund; metathorax with subobsolete carinæ, the basal transverse one wanting; abdomen shagreened, compressed from base of third segment; ovipositor short; petiole short, postpetiole quadrate; legs rather slender.

One specimen from Mt. Washington, N. H. (Mrs. Slosson).

Cremastus ferrugineus n. sp.

♂ ♀.—7-8 mm.; ovipositor 4 mm. Ferruginous, with central vertex, occiput, V-shaped line extending from base of primary wings to middle of metathoracic disc, two apical segments of abdomen, basal half of 2 and dot at base of 3, black; base and apex of hind tibiæ and their tarsi, subfuscous; rest of head, prothorax, scutellum and four anterior coxæ and trochanters in ♂, yellow; wings hyaline, nervures and stigma yellowish brown; stigma comparatively small, oval on inner edge; body polished, shagreened; head and thorax finely and sparsely punctured, parapsides present; metathorax elongate, sloping from base, superior and apical median cells united, polished, subreticulate at base; abdomen strongly compressed beyond second segment; second segment longitudinally aciculate, most of two and apex of one very finely so.

Two specimens from Algonquin, Ill. (Dr. Nason).

Cremastus aciculatus n. sp.

♂.—7 mm. Ferruginous, with central vertex, occiput, spot on anterior of median lobe of mesonotum, metathorax except spot on pleuræ, two basal segments of abdomen, basal dorsal spot on three following and two apical entirely black; posterior tibiæ and tarsi fuscous; face, mouth-parts, orbits, cheeks, scape beneath, prothorax, tegulæ, four anterior coxæ and trochanters, and hind femora at apex, yellow; wings hyaline, nervures and stigma dark brown, paler at base; stigma large, triangular; body shagreened, thorax finely punctured, parapsides deep; metathorax completely areolated, apical median area subrugose and somewhat reticulate throughout; abdomen with the first two segments and basal three-fourths of third distinctly aciculate; postpetiole elongate.

One specimen from Agricultural College, Michigan.

Cremastus nemoralis n. sp.

♂ ♀.—6-8 mm.; ovipositor 5 mm. Black, with entire orbits, mouth-parts and tegulæ, lemon-yellow; in ♂, face and prothorax also; lower face and prothorax in ♀, four anterior legs, and of hind legs the trochanters and apex of femora reddish yellow; rest of hind legs vary from black to piceous; antennæ dark brown; abdomen varies from dark piceous to partly rufous on segments 3 and 4; wings hyaline, stigma and veins dark brown, paler at base; stigma large, triangular, thick; entire body finely shagreened, head and thorax distinctly punctured, parapsides distinct; metathorax completely areolated, carinæ at apex

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distinct; apical median area not distinctly reticulate; abdomen slender, compressed, second segment longitudinally aciculate; postpetiole smooth.

Four specimens from Agricultural College, Michigan.

Cremastus granulatus n. sp.

♂ ♀.—5 mm.; ovipositor 2.5 mm. Black, with thorax and middle segments of abdomen more or less piceous or rufous; orbits, face except black spot beneath antennæ in ♀, mouth-parts, prothorax tegulæ, and legs, except middle of hind femora, their tibiæ and tarsi, which are fuscous, pale yellow; wings hyaline, nervures and stigma yellowish brown, the latter rather large and elongately triangular; thorax opaquely punctured, metathorax with carinæ faint toward apex where it is somewhat reticulate; second abdominal segment and postpetiole distinctly aciculate.

Six specimens from Agricultural College, Michigan.

Leptopygus orbus n. sp.

♂ ♀.—8 mm.; ovipositor 4 mm. Black, with abdomen beyond second segment, ferruginous; orbits, broad in ♂, cheeks beneath, mandibles, tegulæ, and in ♂ scape beneath, spot on face; clypeus, apex of femora, slightly so in ♀, apical trochanter and four anterior coxæ, yellow; clypeus and scape beneath of ♀ rufous; coxæ black, anterior ones pale beneath; rest of four anterior legs ferruginous, hind legs piceous, nearly black in ♀; wings short, subhyaline, nervures and stigma large, brown, paler at base, discal cell considerably narrowed at base; body polished, shagreened, sparsely but distinctly punctured on thorax; parapsides indistinct; metathorax short, rounded, completely areolated, the apical median area very short, polished, coarsely reticulate in ♂; postpetiole and second segment of abdomen considerably broadened, not distinctly aciculate, but opaquely shagreened on two; legs more robust than usual.

Two specimens from Delaware County, Pa. (Chas. Johnson), and Michigan (Watkins).

Exetastes exploratus n. sp.

♀ ♂.—11 mm.; ovipositor 1.5 mm. Black, four anterior legs fulvous with coxæ and trochanters black; posterior legs with coxæ, trochanters, tibiæ, except base, which is often rufous, and basal segment of tarsi, black; hind femora rufous, and tarsal segments, except basal one, yellowish white, sometimes dusky; wings vary from fuliginous (♀) to subhyaline (♂), veins black, stigma reddish brown or black, white at base; transverse median vein of hind wing broken much above the middle, second recurrent nervure sinuate, and pale above the middle; head coarsely punctured, clypeus prolonged, shagreened, not separate, sometimes rufous; antennæ long, slender, tapering; thorax coarsely punctured, metathorax scabrous; abdomen smooth, shining, coarsely punctured on lateral base of first segment.

Twelve females and four males from So. Dakota (Prof. Aldrich) and Michigan.

At first this species was placed with *rufofemoratus* Prov., but upon accumulating so much material and finding no variation, and then

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studying Provancher's type and finding it quite distinct, I feel justified in making this a new species. It also differs quite as distinctly from *niger*.

Exetastes abbreviatus n. sp.

♀ ♂.—12 mm. Black, pilose, with the clypeus, mandibles, except apex, tegulæ and spot before, white; palpi and four anterior legs from apex of femora out, and basal two-thirds of posterior tibiæ dirty white, contrasted more strongly by the black, bristly hairs on them; apex of middle tibiæ and tarsal segments more or less dusky; hind femora dusky rufous shading into black at apex; apical third of posterior tibiæ and all of hind tarsi black; remainder of legs ferruginous; wings hyaline, nervures and stigma black, paler at base; no stump of a vein above third discoidal cell, second recurrent nervure straight, areolet small, petiolate, transverse median vein of hind wing broken in middle; head transverse, punctured; clypeus short, transverse, separated from the face by a broad impression; thorax punctured, glabrous on upper posterior part of mesopleura; abdomen finely punctured, compressed from segment 3, postpetiole broad, petiole with deep central groove nearly to apex, ovipositor short.

Two females and one male from Mt. Washington, N. H. (Mrs. Slosson).

Ceratosoma rubyata n. sp.

♀.—12 mm. A deep fire-red, with tips of mandibles, spot enclosing ocelli, three stripes on mesonotum, the anterior one extending to the prothorax and the two at the side uniting in front of the scutellum, sutures of the thorax and basal half of abdominal segments 2-4, black; the posterior tibiæ are slightly dusky at apex; the entire body, including metathorax, is smooth, shining and without puncture; the abdomen is sharply pointed and segments 2 and 3 have the diagonal diverging grooves as in *Glypta;* wings dusky yellow with veins brown, stigma and costal margin the color of body, the former paler in the center.

One specimen from northern Illinois (Dr. Nason).

Arotes apicatus n. sp.

♀.—11 mm.; ovipositor 8 mm. Black with lemon-yellow marking as follows: anterior orbits, yellow spot on front beneath antennæ, clypeus, mouth-parts except tip of mandibles, cheeks beneath and back of eyes, scape beneath, annulus on antennal segments 10-20, tegulæ, spot beneath, prosternum, scutellums, apex of metathorax, a median dorsal rhomboidal spot at apex of segments 1-4, apical segments and venter; posterior legs with coxæ black, trochanters yellow, femora and tibiæ ferruginous, tarsi fulvous, four anterior legs lemon-yellow, with femora tinged with ferruginous and coxæ dusky above; the entire body is shining, sparsely punctured, and from each puncture issues a small hair; face coarsely punctured; wings hyaline, with a short transverse fuscous line extending from the center of the stigma obliquely across the marginal vein; apex of wing, opaque by a dark brown blotch, abbreviated beneath; veins brown, stigma honey-yellow, except a longitudinal dash below near the origin of the marginal vein; recurrent and cubital nervures coalesce.

One specimen taken in woods at Agricultural College, Michigan, July 8th.

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Colpomeria litoralis n. sp.

♂.—7 mm. Black, with maxillary palpi, tegulæ, spot in front, trochanters, tibiæ and tarsi of middle legs and annuli at base and middle of tibiæ and another at base of tarsi of the hind leg, yellowish white; the remainder of the legs are ferruginous, except hind tibiæ and tarsi, which are brownish black; labial palpi brown, antennæ brown, sericeous, yellowish beneath toward the apex, scape black; wings hyaline, veins and stigma black, whitish at base, areolet large, subquadrate, clypeus emarginate; head and thorax shining, metathorax sparsely punctured and with two central longitudinal carinæ: mesonotum indistinctly trilobed; basal segment of abdomen scabrous and with two large carinæ; the following segments become less deeply punctured, until on the apical segments they are shining and only lightly punctured; apex of each segment with a shining impunctured band; the anterior femora and tibiæ are shaped as in the European species.

Numerous specimens taken in sweeping along the river bank at the Agricultural College; also specimens from Buffalo, N. Y. (Van Duzee), and Toronto, Canada (Brodie).

Pimpla componotus n. sp.

♂.—11 mm. Black, with face, mouth-parts, cheeks beneath, orbital lines above, tegulæ, spot in front, spot beneath each wing, large cuneiform spot on margins of mesonotum, two parallel stripes on mesonotum, scutellums, large spot on anterior mesopleuræ, pro- and mesosternum, four anterior legs beneath, annulus on middle of four posterior tibiæ and most of posterior tarsi, white; remainder of hind legs rufous, except tibiæ and apex of femora and tarsal segments, which are black; antennæ black, slightly pale beneath; wings fusco-hyaline, nervures and stigma brown; areolet large, pentangular, cubito-discoidal vein not broken and with no stump of a vein, humeral cross-vein of hind wing broken much above the middle; head and thorax polished, scarcely punctured; abdomen coarsely and closely punctured; clypeus large, flat, not indented.

One specimen from Moscow, Idaho (Prof. Aldrich).

Pimpla stultor n. sp.

♂.—8 mm. Slender, black; palpi, scape, tegulæ and spot in front, white; mesothorax, except portion beneath wings, and metapleura dark rufous; legs reddish yellow, hind femora and coxæ rufous, hind tarsi, apex and narrow outer stripe on tibiæ dusky, antennæ reddish brown; wings hyaline, iridescent, nervures and stigma pale brown, areolet sessile, triangular; cubito-discoidal vein broken and with a long stump of a vein, humeral cross-nervure of hind wing broken at middle; body polished, abdomen sparsely but coarsely punctured, no distinct carinæ on metathorax.

One specimen from Toronto, Canada (Mr. Wm. Brodie).

Pimpla defensator n. sp.

♀.—8-10 mm.; ovipositor 2.5 mm. Black, with palpi, orbital lines from base of antennæ to occiput, apex of scutellum and postscutellum, white; legs honey-yellow, with anterior coxæ, trochanters and tarsi, annulus at base and broader one at middle of all the tibiæ and basal half of four posterior tarsal segments,

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white; posterior femora at apex, four posterior tibiæ near base and at apex, and four posterior tarsi on apical half of each segment black; abdomen uneven, coarsely punctured, basal segment tuberculate above; thorax smooth, shining; punctures apparent on metathorax, which is otherwise smooth; wings hyaline, nervures and stigma brown; areolet large, the second recurrent not entering at the apex; antennæ brown, whitish beneath near base, scape black.

Two specimens from Agricultural College, Michigan, taken October 13th.

Pimpla conquisitor, var. **rufuscula** n. var.

♀.—Differs from *conquisitor* (1) by having the abdominal segments margined at apex and laterally with rufous, the lateral apical corners in one specimen being broadly rufous: (2) by the antennæ and palpi being brownish rufous; (3) by having the tarsi pale rufous, with apical segment and claws black; the apical portion of all tarsal segments is more or less dusky.

Two females, Michigan and northern Illinois (Dr. Nason).

Polysphincta spinosa n. sp.

♀.—7 mm.; ovipositor 3 mm. Black, with abdomen piceous, darker at apex; head shining, pilose; clypeus dark rufous, palpi white, antennæ pale brown, nearly white at base; thorax black, with scutellum and lower posterior portion of mesopleura rufopiceous; metathorax rufous, dusky above and black on posterior disc; legs honey-yellow, with four anterior trochanters, base, middle and spurs of four posterior tibiæ and all of tarsi, except apex of segments which are brown, white; four posterior tibiæ with brown annulus at apex and another one-fifth from the base; abdomen opaque, punctured, with apical ridge of segments and two apical segments shining; metathorax punctured, convex on dorsum, truncate and concave at apex owing to the protrusion of two large, broad, round spines at the lateral apex; wings subhyaline, areolet wanting, stigma white.

Polysphincta bicarinata n. sp.

♂.—7 mm. Black, with palpi, tegulæ, line in front, trochanters, anterior coxæ, apical half of middle coxæ, apex of all femora, four anterior tibiæ and tarsi, broad stripe on posterior tibiæ, extending from the base nearly to the apex, and basal half of first tarsal segment of hind tarsi, white; remainder of hind legs ferruginous, except hind tibiæ and tarsi, which are black; antennæ brown; wings hyaline, areolet wanting, small stump of cubital cross-vein present, nervures and stigma brown; head and thorax polished; mesonotum trilobed, sparsely and finely punctured; metanotum oval, bicarinate and coarsely punctured; abdomen uneven with prominent swellings and broad deep grooves, coarsely and closely punctured even on apical margins of segments; basal segment bicarinate, deeply grooved at base between carinæ.

One specimen from Moscow, Idaho (Aldrich).

Polysphincta slossonæ n. sp.

♀.—5-6 mm.; ovipositor 1.2 mm. Slender, black, marked with white and rufous; head black, polished; clypeus slightly projecting, palpi and scape white, antennæ brown, dirty white beneath; thorax black, with scutellum, rectangular

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spot in front of it on mesonotum, meso- and metapleura, except upper portion and sternum, rufous; abdomen brown, with venter more or less white; legs white, femora yellowish white, posterior legs with brown annulus at base and apex of femora, one between base and middle of tibiæ and at apex of tibiæ and tarsal segments; wings hyaline, nervures and stigma pale brown, white at base, outer vein of areolet incomplete at base and apex: ovipositor short, strong, slightly ventral; thorax and abdomen shining and sparsely punctured.

Five specimens from Mt. Washington, N. H. (Mrs. Slosson) and named in honor of her for the many new specimens sent me.

Polysphincta minuta n. sp.

♀.—4 mm.; ovipositor 1 mm. Piceous, with mouth-parts, face beneath antennæ; lower portion of antennæ, prothorax, tegulæ and portion around it, parapsidal lines, scutellum, broad apical and lateral margins of abdominal segments and legs, honey-yellow; wings hyaline, iridescent, nervures and stigma brown; areolet wanting, the cubital nervure forming a direct line with the base of marginal, humeral cross-nervure of hind wing not broken; body polished, parapsidal grooves deep; metathorax carinate, lacking the basal transverse carinæ; abdominal segments broad, deeply indented, forming central rhomboidal raised areas, the indentures reticulate.

One specimen from Agricultural College, Michigan.

Polysphincta granulosa n. sp.

♀.—3 mm. Black, with mouth-parts, base of antennæ beneath; tegulæ, spot in front and beneath, trochanters, four anterior coxæ and four posterior tibiæ, except apex, white; four posterior tarsi and apex of their tibiæ brownish black, remainder of legs honey-yellow; wings hyaline, iridescent, nervures and stigma brown, areolet wanting, the cubital cross-vein scarcely visible; head and thorax polished, impunctured, metathorax and abdomen granularly shagreened; mesonotum trilobed, metathorax areolated, but lacking the basal transverse carina, basal segment of abdomen with distinct carinæ, the following segments with a convex transverse impression before the apex, ovipositor short, straight.

One specimen from Agricultural College, Michigan.

Clistopyga nigrocephalus n. sp.

♂.—3 mm. Black, with mesothorax, except anterior part of median lobe of mesonotum, scutellum and metapleura, rufous; scape, mouth-parts, tegulæ, spot in front, spot beneath, margins of mesonotum, basal portion of abdominal segments 2-4, four anterior legs, posterior trochanters and annulus at base and middle of posterior tibiæ, white; posterior coxæ and femora rufous; posterior tibiæ dusky, except the white annulus, tarsi dusky, paler at base; wings hyaline, iridescent, nervures pale brown, stigma darker, areolet wanting; antennæ dark brown; head glabrous, thorax and abdomen shagreened; distinct parapsidal grooves, metathorax with carinæ on apical portion, abdominal segments with rhomboidal elevations.

One specimen from Algonquin, Ill. (Dr. Nason).

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Glypta idahoensis n. sp.

♀.—6 mm.; ovipositor 5 mm. Black and rufous, pilose; head and antennæ black, clypeus and base of mandibles rufous, palpi paler; entire mesothorax, scutellum and metapleura and sternum, rufous; prothorax and metanotum black; abdomen black, with the sutures of segments 1-4 and lateral fourth of all the segments rufous, or dusky rufous; legs rufous, anterior coxæ, four anterior trochanters, four posterior tarsi on basal half of segments, annulus at base of posterior tibiæ and a long stripe in middle of same, white; apex of segments of four posterior tarsi and apex and annulus near base above and stripe beneath on posterior tarsi, black; anterior legs with tibiæ and tarsi yellowish white; face with prominent tubercle; thorax and abdomen finely and rather closely punctured so that there is little luster; metanotum truncate behind; margined by a transverse carina; from this carina are two longitudinal converging carinæ on metanotum that unite behind postscutellum; oblique sutures on abdomen rather broad and deep.

Two specimens from Lewiston and Moscow, Idaho (Prof. Aldrich).

Glypta aldrichii n. sp.

♀ ♂.—10 mm.; ovipositor 7 mm. Black, pilose, coarsely and closely punctured except on two apical segments of abdomen; clypeus, labrum, mandibles except tips, palpi, tegulæ, short line in front, and anterior coxæ and trochanters in ♂, yellowish white; remainder of legs rufous, except apical half of posterior tibiæ and all of posterior tarsi, which are black; mesonotum gibbous, metathorax quadrispherical, fully and distinctly areolated; basal segment of abdomen with carinæ reaching nearly to the apex; antennæ rufous, dusky above, darker in ♀; wings subhyaline, nervures and stigma brown, areolet wanting.

Two specimens from Lewiston and Moscow, Idaho, and named in honor of Prof. J. M. Aldrich, who has contributed so many rare western Ichneumonidæ.

Glypta nomene n. sp.

♀.—8 mm.; ovipositor 4 mm. Pale ferruginous, with yellow markings as follows: annulus on antennæ, broad orbital lines on vertex, cheeks, clypeus, mouth-parts, tegulæ, prothoracic collar, prosternum, broad irregular stripe on meso- and metapleuræ, the latter continuing around the apex of the metathorax, scutellums, four anterior coxæ and stripe on posterior pair; head and mesothorax finely punctured, metathorax more coarsely punctured and with two indistinct transverse carinæ; abdomen with basal segment long, oval, without carinæ; segments two and three with oblique grooves, four with shallow impressions; three basal segments punctured as the metathorax, apex shining; wings hyaline, nervures brown, stigma yellowish white.

One specimen from Colorado (Prof. C. P. Gillette).

Glypta longicauda n. sp.

♀.—10 mm.; ovipositor 13 mm. Black, with tegulæ dusky white, and clypeus, mandibles and legs, except posterior tarsi which are black, rufous; face pilose and with prominent central tubercle; clypeus shining; antennæ black, shining; thorax and abdomen shining, coarsely and evenly punctured throughout, except

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on mesopleuræ, beneath hind wings and on apical segments of abdomen, which are scarcely punctured; metanotum without carina; abdomen broad, depressed, carinæ on basal segment indicated, oblique grooves on the three following segments are deep and broad; wings fusco-hyaline; veins and stigma dark brown; areolet wanting; legs slender, shining.

One specimen from Moscow, Idaho (Prof. Aldrich).

Glypta impressa n. sp.

♂ ♀.—6 mm.; ovipositor 9 mm. Black, with clypeus, lateral apical mesopleuræ and all of metapleuræ rufous; palpi, tegulæ, line before on upper margin of prothorax, trochanters, knees, anterior coxæ, annulus on base and middle of posterior tibiæ and at base of first three tarsal segments of four posterior tarsi white; hind tibiæ and tarsi black; remainder of legs rufous; antennæ slender, black, brown beneath; wings hyaline, nervures and stigma brown; body punctured, polished; face tuberculate, hairy; abdomen with deep impressions on segments 2-4, ovipositor long, slender and with very slender shields.

♂ differs in having the abdominal impressions less distinct, and in having the clypeus, scape beneath and more of the four anterior legs white.

Three specimens from Algonquin, Ill. (Dr. Nason).

Meniscus subflavus n. sp.

♂ ♀.—6 mm.: ovipositor 4 mm. Dark yellowish red, with face, mouth-parts, broad orbital lines, scape beneath, all of the thorax except mesonotum and tinge on metanotum, and nearly all of the legs, dirty lemon-yellow; antennæ and apex of posterior tibiæ and tarsal segments dusky: spots enclosing ocelli blackish; wings hyaline, iridescent, nervures and stigma brown, areolet wanting, humeral cross-nervure of hind wing not broken; thorax coarsely punctured, head and abdomen less so, metathorax without carinæ, no parapsidal grooves, but they are indicated by yellow lines; legs slender, posterior coxæ elongate.

Two specimens from Texas (coll. Amer. Ent. Soc.).

Phytodietus (?) truncatus n. sp.

♀.—2 mm.; ovipositor .5 mm. and curved upward. Piceous, with face, mouth-parts, broad orbital lines, tegulæ, spot beneath, line in front, margins of mesonotum, legs and venter, yellow; antennæ large, as long as thorax and abdomen reddish brown, paler beneath; wings hyaline, iridescent, nervures and stigma brown, yellow at base, areolet triangular, sessile; head and thorax shagreened, abdomen partially so; clypeus large, lower tooth of mandibles longer than upper; no parapsidal grooves nor carinæ on metathorax; abdomen subsessile, broad toward apex, where it is truncate and subcompressed.

One specimen from Brookings, So. Dak. (Prof. Aldrich).

Cylloceria fuscolina n. sp.

♂.—8 mm. Black, with legs beyond the trochanters rufous; antennæ dark rufous, paler toward apex; scape black; wings milky rufous, veins and stigma rufous; head punctured, clypeus separated; face roughened beneath antennæ; thorax shining, punctured; mesonotum trilobed; metanotum carinate, roughened and coarsely punctured; basal segment of abdomen scabrous, spiracles near base; remainder of segments finely punctured.

Two specimens from Colorado (Prof. Gillette).

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Xylonomus catomus n. sp.

♀.—22 mm.; ovipositor 23 mm. Black, to dusky fuscous; head closely and coarsely punctured, dusky rufous, with dusky spot on vertex around ocelli and extending downward to the antennæ; labial palpi and mandibles piceous; maxillary palpi long, slender at apex; antennæ black, with pale annulus on segments 14–16; scape small, rufous; thorax piceous, paler on mesonotum and pleuræ, coarsely and closely punctured, sometimes scabrous; mesonotum trilobed; scutellum prominent, coarsely punctured and with central longitudinal carina; metanotum with four distinct, irregular, longitudinal carinæ, the outer ones culminating in a short, sharp spine; prothoracic shoulders square, but not tuberculate; abdomen opaque, owing to the fine transverse striæ; two basal segments color of the head, the others black; apex tapering, pointed; basal segment long, gradually expanded; wings subhyaline, transversely clouded beneath apical half of stigma; from this clouded band to the apex, hyaline; stigma brown, paler in center and white at base; veins brown, ferruginous at base; anterior legs, middle coxæ and trochanters of hind legs dusky rufous; middle femora and tibiæ piceous to rufous; hind coxæ, femora and tibiæ black to piceous, tarsi fulvous; four anterior tibiæ much pinched at base.

Two specimens from Craigs Mountain and Moscow, Idaho (Prof. Aldrich).

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